

533 Rec'd PCT/PTD 10 SEP 2001

FORM PTO-1350 (Modified) (REV 5-93)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER	
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371				067242-0152	
				U.S. APPLICATION NO. (if filed in U.S.) To Be Assigned 09/936161	
INTERNATIONAL APPLICATION NO. PCT/JP00/01223		INTERNATIONAL FILING DATE March 2, 2000		PRIORITY DATE CLAIMED March 10, 1999	
TITLE OF INVENTION A PHARMACEUTICAL COMPOSITION COMPRISING A DUAL ANTAGONIST AGAINST PGD ₂ /TXA ₂ RECEPTORS HAVING A [2.2.1] OR [3.1.1] BICYCLIC SKELETON					
APPLICANT(S) FOR DO/EO/US Tsunetoshi Honma, Yoshiharu Hiramatsu and Akinori Arimura					
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:					
1.	<input checked="" type="checkbox"/>	This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.			
2.	<input type="checkbox"/>	This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.			
3.	<input type="checkbox"/>	This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).			
4.	<input checked="" type="checkbox"/>	A proper Demand for International Preliminary Examination was made by the 19 th month from the earliest claimed priority date.			
5.	<input checked="" type="checkbox"/>	A copy of the International Application as filed (35 U.S.C. 371(c)(2))			
	<input type="checkbox"/>	is transmitted herewith (required only if not transmitted by the International Bureau).			
	<input checked="" type="checkbox"/>	has been transmitted by the International Bureau.			
	<input type="checkbox"/>	is not required, as the application was filed in the United States Receiving Office (RO/US)			
6.	<input checked="" type="checkbox"/>	A translation of the International Application into English (35 U.S.C. 371(c)(2)).			
7.	<input checked="" type="checkbox"/>	Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))			
	<input type="checkbox"/>	are transmitted herewith (required only if not transmitted by the International Bureau).			
	<input type="checkbox"/>	have been transmitted by the International Bureau.			
	<input type="checkbox"/>	have not been made; however, the time limit for making such amendments has NOT expired.			
	<input checked="" type="checkbox"/>	have not been made and will not be made.			
8.	<input type="checkbox"/>	A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).			
9.	<input checked="" type="checkbox"/>	An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).			
10.	<input checked="" type="checkbox"/>	A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).			
11.	<input type="checkbox"/>	Applicant claims small entity status under 37 CFR 1.27.			
Items 12. to 17. below concern other document(s) or information included:					
12.	<input checked="" type="checkbox"/>	An Information Disclosure Statement under 37 CFR 1.97 and 1.98.			
13.	<input checked="" type="checkbox"/>	An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.			
14.	<input checked="" type="checkbox"/>	A FIRST preliminary amendment.			
	<input type="checkbox"/>	A SECOND or SUBSEQUENT preliminary amendment.			
15.	<input type="checkbox"/>	A substitute specification.			
16.	<input type="checkbox"/>	A change of power of attorney and/or address letter.			
17.	<input checked="" type="checkbox"/>	Other items or information: Copy of the International Search Report			



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PATENT TRADEMARK OFFICE

533 Rec'd PCT/PTO 10 SEP 2001

U.S. APPLICATION NO. (If known, give 37 CFR 1.53(a)(1) No.) To Be Assigned 097/936161		INTERNATIONAL APPLICATION NO. PCT/JP00/01223		ATTORNEY'S DOCKET NUMBER 067242-0152	
18. <input checked="" type="checkbox"/> The following fees are submitted:				CALCULATIONS	
Basic National Fee (37 CFR 1.492(a)(1)-(5): Search Report has been prepared by the EPO or JPO.....				\$860.00	
International preliminary examination fee paid to USPTO (37 CFR 1.482).....				\$890.00	
No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)).....				\$710.00	
Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO.....				\$1,000.00	
International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4).....				\$100.00	
ENTER APPROPRIATE BASIC FEE AMOUNT =				\$860.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than 20 Months from the earliest claimed priority date (37 CFR 1.492(e))					
Claims	Number Filed	Included in Basic Fee	Extra Claims	Rate	
Total Claims	12	- 20	= 0	x \$18.00	\$0.00
Independent Claims	1	- 3	= 0	x \$80.00	\$0.00
Multiple dependent claim(s) (if applicable)				\$270.00	
TOTAL OF ABOVE CALCULATIONS =				\$860.00	
Reduction by 1/2 for filing by small entity, if applicable.				\$0.00	
SUBTOTAL =				\$860.00	
Processing fee of \$130.00 for furnishing English translation later the 20 months from the earliest claimed priority date (37 CFR 1.492(f)).				+	
TOTAL NATIONAL FEE =				\$860.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +				\$40.00	
TOTAL FEES ENCLOSED =				\$900.00	
				Amount to be: refunded \$	
				charged \$	
<p>a. <input checked="" type="checkbox"/> A check in the amount of \$900.00 to cover the above fees is enclosed.</p> <p>b. <input type="checkbox"/> Please charge my Deposit Account No. 19-0741 in the amount of \$0.00 to the above fees. A duplicate copy of this sheet is enclosed.</p> <p>c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 19-0741. A duplicate copy of this sheet is enclosed.</p>					
<p>NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.</p>					
<p>SEND ALL CORRESPONDENCE TO:</p> <p>Foley & Lardner Washington Harbour 3000 K Street, N.W., Suite 500 Washington, D.C. 20007-5109</p>					
<p>SIGNATURE <u>Phillip J. Articola</u> NAME <u>STEPHEN D. MAERBUS</u> for <u>Reg. No. 38,819</u> REGISTRATION NUMBER 35,264</p>					

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Tsunetoshi Honma et al.
Entitled: A PHARMACEUTICAL COMPOSITION COMPRISING A DUAL
ANTAGONIST AGAINST PGD₂/TXA₂ RECEPTORS HAVING A [2.2.1]
OR [3.1.1] BICYCLIC SKELETON
Serial No. To be assigned
Filing Date Concurrently

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination of the present application, Applicant's respectfully requests that the above-identified application be amended as follows:

In the Claims:

In accordance with 37 C.F.R. § 1.121(c) (3), please substitute for pending claims 12-19 with the following clean version of the claims. The changes to these claims are shown explicitly in the attached "Marked Up Version of Claims."

12. (Amended) The compound according to claim 8 wherein X² is a bond, -CH₂-, -S-, -SO₂-, -CH₂-O-, -O-CH₂-, -CH₂-S- or -S-CH₂-, the prodrug, the pharmaceutically acceptable salt, the hydrate thereof.

13. (Amended) The compound according to claim 8 wherein R¹ is -CH₂-CH=CH-CH₂-CH₂-CH₂-COOH, m is 0, and p is 0, the prodrug, the pharmaceutically acceptable salt, the hydrate thereof.

14. (Amended) A pharmaceutical composition which comprises a compound according to claim 8.

15. (Amended) A pharmaceutical composition having a dual antagonistic activity against PGD₂/TXA₂ receptors which comprises a compound according to claim 8.

16. (Amended) The pharmaceutical composition comprising a compound according to claim 14, which is used for asthma.

17. (Amended) The pharmaceutical composition comprising a compound according to claim 14, which is used for nasal blockage.

18. (Amended) Use of the compound according to claim 8 for manufacturing a pharmaceutical composition for asthma or nasal blockage.

19. (Amended) A method for treating asthma or nasal blockage which comprises administering the compound according to claim 8.

REMARKS

Applicant respectfully requests that the foregoing amendments be made prior to examination of the present application.

Respectfully submitted,

Date September 10, 2001

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Reg. No.
38,819

MARKED UP VERSION OF AMENDED CLAIMS

12. (Amended) The compound according to [any one of claims 8 to 11] claim 8 wherein X^2 is a bond, $-\text{CH}_2-$, $-\text{S}-$, $-\text{SO}_2-$, $-\text{CH}_2-\text{O}-$, $-\text{O}-\text{CH}_2-$, $-\text{CH}_2-\text{S}-$ or $-\text{S}-\text{CH}_2-$, the prodrug, the pharmaceutically acceptable salt, the hydrate thereof.

13. (Amended) The compound according to [any one of claims 8 to 12] claim 8 wherein R^1 is $-\text{CH}_2-\text{CH}=\text{CH}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{COOH}$, m is 0, and p is 0, the prodrug, the pharmaceutically acceptable salt, the hydrate thereof.

14. (Amended) A pharmaceutical composition which comprises a compound according to [any one of claims 8 to 13] claim 8.

15. (Amended) A pharmaceutical composition having a dual antagonistic activity against $\text{PGD}_2/\text{TXA}_2$ receptors which comprises a compound according to [any one of claims 8 to 13] claim 8.

16. (Amended) The pharmaceutical composition comprising a compound according to claim 14 [or 15], which is used for asthma.

17. (Amended) The pharmaceutical composition comprising a compound according to claim 14 [or 15], which is used for nasal blockage.

18. (Amended) Use of the compound according to [any one of claims 8 to 13] claim 8 for manufacturing a pharmaceutical composition for asthma or nasal blockage.

19. (Amended) A method for treating asthma or nasal blockage which comprises administering the compound according to [any one of claims 8 to 13] claim 8.

DESCRIPTION

A Pharmaceutical composition comprising a dual antagonist against PGD₂/TXA₂ receptors having a [2.2.1] or [3.1.1] bicyclic skeleton

Technical Field

The present invention relates to a compound having a [2.2.1] or [3.1.1] bicyclic skeleton and a pharmaceutical composition comprising the same having a dual antagonistic activity against PGD₂/TXA₂ receptors.

Background Art

Some compounds similar to those of the present invention having a [2.2.1] or [3.1.1] bicyclic skeleton have been described as thromboxane A₂ (TXA₂) antagonists in the Japanese Patent Publication (Kokoku) No. 53295/1991. TXA₂ is known to possess various activities such as platelet aggregation, thrombogenesis, contraction of airway smooth muscle, advance of respiratory anaphylaxis and the like. The TXA₂ antagonists have, therefore, been considered to be useful as anti-thrombotic agents, anti-vasoconstrictor, anti-respiratory contractile agents as well as medicines for treating myocardial infarction or asthma. The TXA₂ antagonists can be used for treating or improving conditions of diseases such as arteriosclerosis, myocardial infarction, acute myocardial ischemia angina, cardiovascular shock or preventing unexpected death and the like.

Further, other compounds similar to those of the present invention having a [2.2.1] or [3.1.1] bicyclic skeleton have been described as prostaglandin D₂ (PGD₂) antagonists in WO97/00853. PGD₂ is a prostanoid

released from mast cells in which it is produced through PGG₂ and PGH₂ from arachidonic acid by the action of cyclooxygenase activated by immunological or unimmunological stimulation.

PGD₂ can cause strong contraction of smooth muscle of bronchus to lead to bronchial asthma, and dilate the peripheral vessels to cause an anaphylactic shock in a systemic allergic state.

Accordingly, PGD₂ antagonists are useful for the improvement of conditions caused by excessive production of PGD₂, particularly as medicines for treating diseases involved with mast cell dysfunction, for example, systemic mastocytosis and disorder of systemic mast cell activation as well as tracheal contraction, allergic rhinitis, allergic conjunctivitis, urticaria, itching, atopic dermatitis, alimentary allergy, ischemic reperfusion injury, cerebrovascular disorder, and inflammation.

As shown above, PGD₂ receptor antagonists have a quite different character from that of TXA₂ receptor antagonists in the site and mechanism of action and indications thereof.

On the other hand, a compound having a dual antagonistic activity against both a TXA₂ receptor and a PGD₂ receptor can be useful as therapeutic agents for various diseases caused by TXA₂ or PGD₂.

For example, in the case of bronchial asthma, it is known that TXA₂ cause potent tracheal contraction and respiratory anaphylaxis and PGD₂ effects infiltration of eosinophils. From these comprehension, TXA₂ and PGD₂ are thought to be one of causative substances of the pathopoiesis and advance of asthma, thus the dual antagonistic compounds are expected to be more potent agents for treating asthma than ever known antagonists.

Further, in the case of allergic rhinitis, it is recognized that TXA₂ and

PGD₂ cause the swelling of nasal mucosa through the aggravation of vascular permeability, and PGD₂ induces the nasal blockage through the enlargement of vascular volume. Therefore, the dual antagonistic compounds are expected to be more potent agents for treating nasal blockage than ever known
5 antagonists.

These diseases and condition thereof might be treated by administering both a TXA₂ receptor antagonist and a PGD₂ receptor antagonist at the same time, for example, in combination therapy or as a mixture thereof. But the administration of two or more agents often causes
10 some problems due to the difference of their metabolic rate. For example, when the antagonists are different from each other in the time to reach a maximum blood concentration or the duration of action, they do not always efficiently exhibit each receptor antagonistic effect at the same time, failing to give a desired additive or synergic effect.

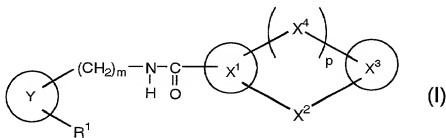
15 It has therefore been desired to develop medicines having a dual antagonistic activity against TXA₂/PGD₂ receptors, which exhibit new excellent therapeutic effects and can be used for many indications.

Disclosure of Invention

20 The present inventors have studied intensively to develop a pharmaceutical composition having a dual antagonistic activity against TXA₂/PGD₂ receptors and found out new compounds and pharmaceutical compositions comprising them.

The present invention provides:

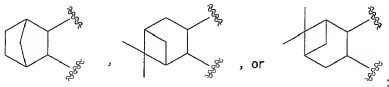
- 25 (1) a pharmaceutical composition having a dual antagonistic activity against PGD₂/TXA₂ receptors which comprises a compound of the formula (I):



wherein



is



R^1 is $-\text{CH}_2\text{-CH=CH-CH}_2\text{-CH}_2\text{-CH}_2\text{-COOR}^2$ or $-\text{CH=CH-CH}_2\text{-CH}_2\text{-CH}_2\text{-COOR}^2$;

R^2 is hydrogen or alkyl;

m is 0 or 1;

p is 0 or 1, provided that when $p = 0$, X^1 is not bonded to X^3 via X^4 ;

X^1 and X^3 are independently optionally substituted aryl or optionally substituted heteroaryl;

X^2 is a single bond, $-\text{CH}_2-$, $-\text{CH}_2\text{-CH}_2-$, $-\text{C(=O)-}$, $-\text{O-}$, $-\text{S-}$, $-\text{SO-}$, $-\text{SO}_2-$, $-\text{NH-}$, $-\text{N(CH}_3)-$, $-\text{C(=N-O-CH}_3)-$, $-\text{N=N-}$, $-\text{CH=CH-}$, $-\text{C(=O)-NH-}$, $-\text{NH-C(=O)-}$, $-\text{CH}_2\text{-NH-}$, $-\text{NH-CH}_2-$, $-\text{CH}_2\text{-O-}$, $-\text{O-CH}_2-$, $-\text{CH}_2\text{-S-}$, $-\text{S-CH}_2-$, $-\text{CH}_2\text{-SO}_2-$, $-\text{SO}_2\text{-CH}_2-$,

$\text{SO}_2\text{-NH-}$ or $-\text{NH-SO}_2-$;

X^4 is $-\text{CH}_2-$, $-\text{CH}_2\text{-CH}_2-$, $-\text{C(=O)-}$, $-\text{SO-}$, $-\text{SO}_2-$, $-\text{C(=O)-NH-}$, $-\text{NH-C(=O)-}$, $-\text{CH}_2\text{-NH-}$, $-\text{NH-CH}_2-$, $-\text{CH}_2\text{-O-}$, $-\text{O-CH}_2-$, $-\text{CH}_2\text{-S-}$, $-\text{S-CH}_2-$, $-\text{CH}_2\text{-SO}_2-$, $-\text{SO}_2\text{-CH}_2-$, $\text{SO}_2\text{-NH-}$ or $-\text{NH-SO}_2-$, a prodrug, a pharmaceutically acceptable salt or a hydrate thereof,

(2) the pharmaceutical composition having a dual antagonistic activity

against $\text{PGD}_2/\text{TXA}_2$ receptors according to the above (1) wherein at least one of X^1 and X^3 is optionally substituted heteroaryl,

(3) the pharmaceutical composition having a dual antagonistic activity against $\text{PGD}_2/\text{TXA}_2$ receptors according to the above (1) or (2) wherein R^1 is -

5 $\text{CH}_2=\text{CH}=\text{CH}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{COOH}$, m is 0 and p is 0,

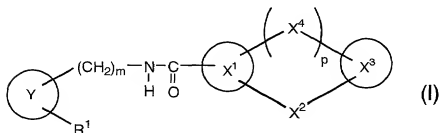
(4) the pharmaceutical composition having a dual antagonistic activity against $\text{PGD}_2/\text{TXA}_2$ receptors according to any one of the above (1) to (3) which is used for asthma,

(5) the pharmaceutical composition having a dual antagonistic activity 10 against $\text{PGD}_2/\text{TXA}_2$ receptors according to any one of the above (1) to (3) which is used for nasal blockage,

(6) use of the compound according to any one of the above (1) to (3) for manufacturing a pharmaceutical composition for asthma or nasal blockage,

(7) a method for treating asthma or nasal blockage which comprises 15 administering the compound according to any one of the above (1) to (3),

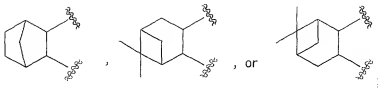
(8) a compound of the formula (I):



wherein



20 is



R¹ is -CH₂-CH=CH-CH₂-CH₂-CH₂-COOR² or -CH=CH-CH₂-CH₂-CH₂-COOR²;

R² is hydrogen or alkyl;

m is 0 or 1;

5 p is 0 or 1, provided that when p = 0, X¹ is not bonded to X³ via X⁴;

X¹ and X³ are independently optionally substituted aryl or optionally substituted heteroaryl;

X² is a single bond, -CH₂-, -CH₂-CH₂-, -C(=O)-, -O-, -S-, -SO-, -SO₂-, -NH-, -N(CH₃)-, -C(=N-O-CH₃)-, -N=N-, -CH=CH-, -(C=O)-NH-, -NH-(C=O)-, -CH₂-NH-, -NH-CH₂-, -CH₂-O-, -O-CH₂-, -CH₂-S-, -S-CH₂-, -CH₂-SO₂-, -SO₂-CH₂-, -SO₂-NH- or -NH-SO₂-;

X⁴ is -CH₂-, -CH₂-CH₂-, -C(=O)-, -SO-, -SO₂-, -(C=O)-NH-, -NH-(C=O)-, -CH₂-NH-, -NH-CH₂-, -CH₂-O-, -O-CH₂-, -CH₂-S-, -S-CH₂-, -CH₂-SO₂-, -SO₂-CH₂-, -SO₂-NH- or -NH-SO₂-;

15 provided that when



is



a compound wherein R¹ is -CH₂-CH=CH-CH₂-CH₂-CH₂-COOR², R² is hydrogen

20 or methyl, m is 0, p is 0, X¹ is phenyl optionally substituted with methoxy, X² is a bond, -O-, -CH₂-, -C(=O)-NH-, -S- or -N=N-, and X³ is phenyl optionally

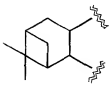
substituted with hydroxy, acetoxy or methoxy, and a compound wherein R^1 is $-\text{CH}_2-\text{CH}=\text{CH}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{COOH}$, m is 1, p is 0, X^1 is phenyl, X^2 is $-\text{N}=\text{N}-$, and X^3 is phenyl, are excluded, and

when



5

is



R^1 is $-\text{CH}_2-\text{CH}=\text{CH}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{COOR}^2$, R^2 is hydrogen or methyl, m is 0,

and p is 0, a compound wherein X^1 is phenyl optionally substituted with methyl or methoxy, X^2 is a single bond, $-\text{CH}_2-\text{CH}_2-$, $-\text{C}(=\text{O})-$, $-\text{NH}-$, $-\text{O}-$, $-\text{S}-$, $-\text{SO}-$, $-\text{SO}_2-$, $-\text{CH}=\text{CH}-$, $-\text{N}=\text{N}-$, $-\text{C}(=\text{O})-\text{NH}-$ or $-\text{NH}-\text{C}(=\text{O})-$, and X^3 is phenyl

optionally substituted with methyl, hydroxy, acetoxy, methoxy, ethoxy, isopropoxy, dimethylamino, hydroxymethyl, methoxymethyl or carboxy, a

compound wherein X^1 is phenyl, X^2 is a single bond, $-\text{CH}_2-$ or $-\text{CH}=\text{CH}-$, and X^3

is imidazolyl, thienyl, pyridyl or tetrazolyl optionally substituted with methyl

or phenyl, and a compound wherein X^1 is benzothienyl, isoxazolyl or thienyl

optionally substituted with methyl, X^2 is a single bond or $-\text{S}-$, and X^3 is phenyl

optionally substituted with methoxy or methyl, are excluded, a prodrug, a

pharmaceutically acceptable salt, a hydrate thereof,

(9) the compound according to the above (8) wherein at least one of X^1 and X^3 is optionally substituted heteroaryl, the prodrug, the pharmaceutically acceptable salt, the hydrate thereof,

(10) the compound according to the above (8) wherein X^1 and X^3 each is

independently optionally substituted heteroaryl, the prodrug, the pharmaceutically acceptable salt, the hydrate thereof,

(11) the compound according to the above (8) wherein at least one of X^1 and X^3 is optionally substituted thienyl or optionally substituted benzothienyl, the

5 prodrug, the pharmaceutically acceptable salt, the hydrate thereof,

(12) the compound according to any one of the above (8) to (11) wherein X^2 is a single bond, $-CH_2-$, $-S-$, $-SO_2-$, $-CH_2-O-$, $-O-CH_2-$, $-CH_2-S-$ or $-S-CH_2-$, the prodrug, the pharmaceutically acceptable salt, the hydrate thereof,

10 (13) the compound according to any one of the above (8) to (12) wherein R^1 is $-CH_2-CH=CH-CH_2-CH_2-CH_2-COOH$, m is 0, and p is 0, the prodrug, the pharmaceutically acceptable salt, the hydrate thereof,

(14) a pharmaceutical composition which comprises a compound according to any one of the above (8) to (13),

15 (15) a pharmaceutical composition having a dual antagonistic activity against PGD_2/TXA_2 receptors which comprises a compound according to any one of the above (8) to (13),

(16) the pharmaceutical composition according to the above (14) or (15), which is used for asthma, and

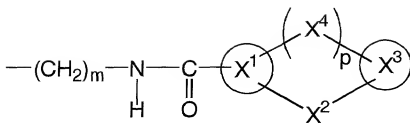
20 (17) the pharmaceutical composition according to the above (14) or (15), which is used for nasal blockage.

Best Mode for Carrying Out the Invention

A compound of the present invention is characterized in that

25 (A) a bicyclic ring represented by the Y ring of the above formula (I) is [2.2.1] or [3.1.1] skeleton,

(B) an ω chain attached to the bicyclic ring, a group represented by the formula:



of the above formula (I), includes $-NH-CO-$, and X^1 and X^3 each is independently optionally substituted aryl or optionally substituted heteroaryl,

5 (C) X^1 and X^3 bond via X^2 , and the like

A more preferred embodiment is a compound of the formula (I) wherein

- (1) at least one of X^1 and X^3 is optionally substituted heteroaryl,
- (2) X^1 and X^3 each is independently optionally substituted heteroaryl,
- (3) at least one of X^1 and X^3 is optionally substituted thienyl or optionally substituted benzothienyl,
- 10 (4) R^1 is $-CH_2-CH=CH-CH_2-CH_2-CH_2-COOH$, m is 0 and p is 0,
- (5) X^2 is a bond, $-CH_2-$, $-S-$, $-SO_2-$, $-CH_2-O-$, $-O-CH_2-$, $-CH_2-S-$ or $-S-CH_2-$,
- (6) R^1 is $-CH=CH-CH_2-CH_2-CH_2-COOH$ and m is 1, or
- (7) p is 0.

15 The term "heteroaryl" includes a 5- to 7-membered aromatic heterocycle containing one or more oxygen atom, sulfur atom and/or nitrogen atom in the ring, or such an aromatic heterocycle as fused with one or more carbocycle or other aromatic heterocycle, which has a bond at any substitutable. Any one of aromatic heterocycle and aromatic carbocycle may
20 have a bond. "Heteroaryl" may have a bond at a nitrogen atom as well as a carbon atom of aromatic heterocycle or aromatic carbocycle. Examples of "heteroaryl" include pyrrolyl (e.g., 1-pyrrolyl, 2-pyrrolyl, 3-pyrrolyl), pyridyl (e.g., 2-pyridyl, 3-pyridyl, 4-pyridyl), pyrazolyl (e.g., 1-pyrazolyl, 3-pyrazolyl, 4-pyrazolyl), imidazolyl (e.g., 1-imidazolyl, 2-imidazolyl, 4-imidazolyl),

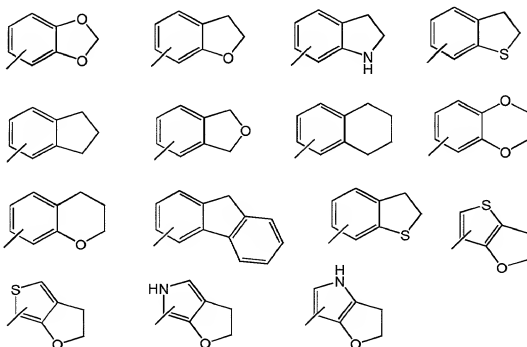
pyrimidinyl (e.g., 2-pyrimidinyl, 4-pyrimidinyl, 5-pyrimidinyl), pyrazinyl (e.g., 2-pyrazinyl), indolyl (e.g., 1-indolyl, 2-indolyl, 3-indolyl, 4-indolyl, 5-indolyl, 6-indolyl, 7-indolyl), carbazolyl (e.g., 1-carbazolyl, 2-carbazolyl, 3-carbazolyl, 4-carbazolyl, 9-carbazolyl), benzimidazolyl (e.g., 1-benzimidazolyl, 2-benzimidazolyl, 4-benzimidazolyl, 5-benzimidazolyl), indazolyl (e.g., 1-indazolyl, 2-indazolyl, 3-indazolyl, 4-indazolyl, 5-indazolyl, 6-indazolyl, 7-indazolyl), quinolyl (e.g., 2-quinolyl, 3-quinolyl, 4-quinolyl, 5-quinolyl, 6-quinolyl, 7-quinolyl, 8-quinolyl), isoquinolyl (e.g., 1-isoquinolyl, 3-isoquinolyl, 4-isoquinolyl, 5-isoquinolyl, 6-isoquinolyl, 7-isoquinolyl, 8-isoquinolyl), furyl (e.g., 2-furyl, 3-furyl), benzofuryl (e.g., 2-benzofuryl, 3-benzofuryl, 4-benzofuryl, 5-benzofuryl, 6-benzofuryl, 7-benzofuryl), thienyl (e.g., 2-thienyl, 3-thienyl), benzothienyl (e.g., benzo[b]thiophen-2-yl, benzo[b]thiophen-3-yl, benzo[b]thiophen-4-yl, benzo[b]thiophen-5-yl, benzo[b]thiophen-6-yl, benzo[b]thiophen-7-yl), dibenzothienyl (e.g., 2-dibenzothienyl, 3-dibenzothienyl), dibenzofuryl (e.g., 2-dibenzofuryl, 3-dibenzofuryl), naphthothienyl (e.g., naphtho[2,3-b]thiophen-2-yl, naphtho[2,3-b]thiophen-3-yl, naphtho[1,2-b]thiophen-2-yl, naphtho[1,2-b]thiophen-3-yl), oxazolyl (e.g., 2-oxazolyl, 4-oxazolyl, 5-oxazolyl), isoxazolyl (e.g., 3-isoxazolyl, 4-isoxazolyl, 5-isoxazolyl), thiazolyl (e.g., 2-thiazolyl, 4-thiazolyl, 5-thiazolyl), isothiazolyl (e.g., 3-isothiazolyl, 4-isothiazolyl, 5-isothiazolyl), imidazothiazolyl (e.g., imidazo[2,1-b]thiazol-2-yl, imidazo[2,1-b]thiazol-3-yl), benzoisoxazolyl (e.g., benzo[d]isoxazol-3-yl), benzothiazolyl (e.g., benzo[d]thiazol-2-yl) or the like.

"Aromatic carbocycle or other aromatic heterocycle" which may fuse the above "heteroaryl" includes 5- to 7-membered aromatic cycle which may contains one or more oxygen atom, sulfur atom and/or nitrogen atom in the ring, or such a aromatic ring as fused with one or more other aromatic rings.

"Aryl" includes mono aromatic carbocyclyl (e.g., phenyl) or fused

aromatic heterocyclyl (e.g., 1-naphthyl, 2-naphthyl, 1-anthryl, 9-anthryl, 1-phenanthryl, 10-phenanthryl).

"Aryl" or "heteroaryl" may be fused 4- to 7-membered cycloalkane or 4- to 7-membered non-aromatic heterocycle. Examples of cycloalkane include cyclobutane, cyclopentane, cyclohexane, cycloheptane. Examples of non-aromatic heterocycle includes pyrrolidine, piperazine, oxorane, 1,3-dioxorane, 1,4-dioxane, thiorane, or the like. "cycloalkane" or "non-aromatic heterocycle" may be fused with aromatic carbocycle or aromatic heterocycle. Examples of aryl or heteroaryl fused with 4- to 7-membered cycloalkane or 4- to 7-membered non-aromatic heterocycle are illustrated below.



Examples of the substituent on "optionally substituted aryl" or "optionally substituted heteroaryl" include a group of the formula: $-Z^1-Z^2$ wherein Z^1 is a single bond, $-O-$, $-S-$, $-NH-$, $-NH-C(=O)-$, $-NH-C(=O)-O-$, $-NH-SO_2-$, $-C(=O)-$, $-O-C(=O)-$, $-C(=O)-O-$, or $-SO_2-$; and Z^2 is alkyl, haloalkyl, alkenyl, alkynyl, aryl optionally substituted alkyl or halogen, heteroaryl optionally substituted with alkyl or halogen, arylalkyl optionally substituted

with alkyl or halogen, heteroarylalkyl optionally substituted with alkyl or halogen, carboxy, halogen (F, Cl, Br, I), hydroxyalkyl, hydroxy, nitro, cyano, mercapto, thioformyl, thioacetyl, thiocarboxy, dithiocarboxy, thiocarbamoyl, sulfinio, sulfo, sulfamoyl, sulfoamino, optionally substituted amino, optionally substituted aminoalkyl, hydroxyamino, carbamoyl, hydrazino. One to three substituents may be at any suitable position on the above aryl or heteroaryl.

"Alkyl" includes a straight or branched C1 to C8 alkyl group or a C3 to C8 cycloalkyl group, for example, methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, tert-butyl, n-pentyl, isopentyl, n-hexyl, n-heptyl, n-octyl, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl or the like.

"Haloalkyl" includes a straight or branched C1 to C8 alkyl or C3 to C8 cycloalkyl group substituted with one or more halogen, for example, chloromethyl, fluoromethyl, trifluoromethyl, 2,2,2-trifluoroethyl, 1,1-difluoroethyl, trichloromethyl, 2,2,2-trichloroethyl, 1,1-dichloroethyl or the like.

"Alkenyl" includes a straight or branched C2 to C8 alkenyl or C3 to C8 cycloalkenyl group having one or more double bonds, for example, vinyl, 1-propenyl, 2-propenyl, isopropenyl, 2-cyclobuten-1-yl, 2-cyclopenten-1-yl, 3-cyclopenten-1-yl, 2-cyclohexen-1-yl or the like.

"Alkynyl" includes a straight or branched C2 to C8 alkynyl or C3 to C8 cycloalkynyl group having one or more triple bonds, for example, ethynyl, 1-propynyl, 2-propynyl, 1-butyne, 2-butyne, 3-butyne or the like.

"Halogen" means fluoro, chloro, bromo, iodo.

"Alkyl", "aryl" and "heteroaryl" used in the term "arylalkyl" or "heteroarylalkyl" have the same meaning of the above "alkyl", "aryl" and "heteroaryl".

"Hydroxy alkyl" includes the above "alkyl" substituted with one or two

hydroxy, for example, hydroxymethyl, 1-hydroxyethyl, 2-hydroxyethyl, 1,2-dihydroxyethyl, 1,2-dihydroxy-n-propyl or the like.

Examples of the substituent of "optionally substituted amino" or "optionally substituted amino alkyl" include the above "alkyl", the above
5 "arylalkyl", the above "aryl", the above "heteroaryl", the above "heteroarylalkyl" or the like. They may be mono- or di-substituted with these substituents. When the substituent is alkyl, alkyl may form a ring together with a nitrogen atom of an amino group.

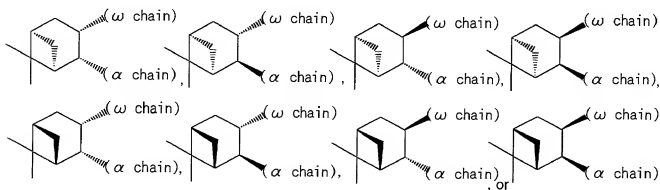
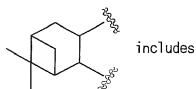
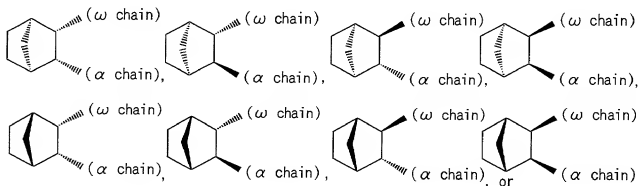
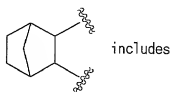
Example of "optionally substituted amino" includes amino,
10 dimethylamino, methylethylamino, diethylamino, pyrrolidino, piperidino, phenylmethylamino, isopropylamino, diisopropylamino or the like.

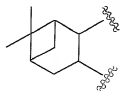
Examples of "optionally substituted aminoalkyl" include dimethylaminomethyl, methylethylaminomethyl, diethylaminomethyl, pyrrolidinomethyl, piperidinomethyl, phenylmethylaminomethyl,
15 isopropylaminomethyl, diisopropylaminomethyl or the like.

"A pharmaceutical composition having a dual antagonistic activity against PGD₂/TXA₂ receptors" means a pharmaceutical composition comprising a compound having at least one compound of the formula (I) having an antagonistic activity against both a PGD₂ receptor and a TXA₂ receptor.

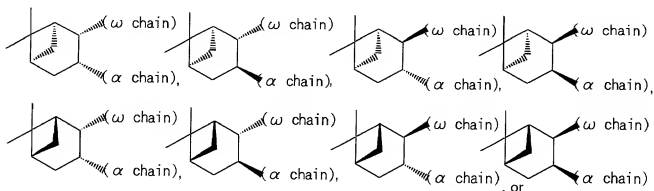
20 The present invention includes a method for treating asthma or nasal blockage which comprises administering a compound of the formula (I) and use of a compound of the formula (I) for manufacturing a medicine for asthma or nasal blockage.

A compound of the present invention can be any of the following stereo
25 isomers of [2.2.1] and [3.1.1] bicyclic skeleton.

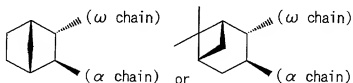




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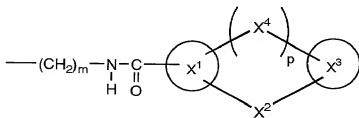


In these stereo isomers, the most preferable is a compound having the skeleton of the formula:



5

"α chain" means a group represented by the formula: -R¹, and "ω chain" means a group represented by the formula:



The present invention includes all stereo isomers of them and the optional mixtures thereof. Namely, the bond binding to the bicyclic ring is in R configuration or S configuration, and all of the stereo isomers (diastereomer, epimer, enantiomer and the like), racemates, and optional mixture thereof are included in the present invention.

Moreover, the α chain of the compound of the present invention can be in Z configuration or E configuration, thus a compound having any of the

configurations and the mixture thereof are included in the present invention.

A prodrug of a compound of the formula (I) is a derivative of the compound of the present invention having a group which can be decomposed
5 chemically or metabolically, and such prodrug is converted to a pharmaceutically active compound of the present invention by means of solvolysis or by placing the compound in vivo under a physiological condition. Method for the selection and process of an appropriate prodrug derivative are described in the literature such as Design of Prodrugs, Elsevier, Amsterdam
10 1985.

When the compound of the formula (I) has a carboxyl group, an ester derivative prepared by reacting a basal acid compound with a suitable alcohol or an amide derivative prepared by reacting a basal acid compound with a suitable amine is exemplified as a prodrug. A particularly preferred ester
15 derivative as an prodrug is an optionally substituted alkyl ester derivative (e.g., methyl ester, ethyl ester, n-propyl ester, isopropyl ester, n-butyl ester, isobutyl ester, tert-butyl ester, morpholinoethyl ester), an arylalkyl ester derivative (e.g., benzyl ester, phenethyl ester, benzhydryl ester), or the like. A particularly preferred amide derivative as a prodrug is alkyl amide
20 derivative (e.g., N-methyl amide, N-ethyl amide, N-(n-propyl)amide, N-isopropyl amide, N-(n-butyl)amide, N-isobutyl amide, N-(tert-butyl)amide), aryl alkyl amide (e.g., N-benzyl amide, N-phenethyl amide, benzhydryl amide), or the like.

When the compound of the formula (I) has a hydroxy group, an acyloxy
25 derivative prepared by reacting with a suitable acyl halide (e.g., acid chloride, halogenated acid) or a suitable acid anhydride (e.g., mixed acid anhydride) is exemplified as a prodrug. A particularly preferred acyloxy derivative as a

prodrug is a derivative substituted with optionally substituted alkylcarbonyloxy (e.g., $-\text{OCOC}_2\text{H}_5$, $-\text{OCO}(\text{tert-Bu})$, $-\text{OCOC}_{16}\text{H}_{31}$, $-\text{OCOCH}_2\text{CH}_2\text{COONa}$, $-\text{OCOCH}(\text{NH}_2)\text{CH}_3$, $-\text{OCOCH}_2\text{N}(\text{CH}_3)_2$), optionally substituted arylcarbonyloxy (e.g., $-\text{OCO}(\text{m-COONa-Ph})$ or the like.

5 When the compound of the formula (I) has an amino group, an amide derivative prepared by reacting with a suitable acid halide or a suitable acid anhydride is exemplified as a prodrug. A particularly preferred amide derivative as a prodrug is a derivative substituted with optionally substituted alkylcarbonyl (e.g., $-\text{NHCO}(\text{CH}_2)_{20}\text{CH}_3$, $-\text{NHCOCH}(\text{NH}_2)\text{CH}_3$) or the like.

10 Examples of a salt of the compound of the formula (I) or its prodrug include alkali metal salts such as lithium salts, sodium salts or potassium salts, alkaline-earth metal salts such as calcium salts, salts with organic bases such as tromethamine, trimethylamine, triethylamine, 2-aminobutane, 15 tert-butylamine, diisopropylethylamine, n-butylmethylamine, cyclohexylamine, dicyclohexylamine, N-isopropylcyclohexylamine, furfurylamine, benzylamine, methylbenzylamine, dibenzylamine, N,N-dimethylbenzylamine, 2-chlorobenzylamine, 4-methoxybenzylamine, 1-naphthylamine, diphenylbenzylamine, triphenylamine, 1- 20 naphthylamine, 1-aminoanthracene, 2-aminoanthracene, dehydroabietylamine, N-methylmorpholine, pyridine), basic amino acid salts such as arginine salts or lysine salts.

A hydrate means a hydrate of the compound of the formula (I), its prodrug or its pharmaceutically acceptable salt, for example, monohydrate, 25 dihydrate or the like.

General processes for the preparation of the compounds of the formula

prepared by reacting a carboxylic acid of the formula (M-2) or its reactive derivative with an amino compound of the formula (M-1).

In this process, the starting compound (M-1) wherein R¹ is -CH₂-CH=CH-CH₂-CH₂-CH₂-COOMe, m is 0, Y is [2.2.1]bicyclic skeleton, 7-(3-amino-bicyclo[2.2.1]hept-2-yl)-5-heptenoic acid methyl ester is described in the Japanese Patent Publication (Kokoku) No. 79060/1993. The other starting compounds can be prepared in accordance with methods as described in the above publication.

When p is 0, the carboxylic acid of the formula (M-2) can be prepared by reacting a carboxylic acid having X¹ or its reactive derivative with a compound having X³. A person ordinary skilled in the art can carry out such a reaction by selecting the kinds of reactions and their conditions depending on the kind of X².

The reactive derivatives of carboxylic acid of the formula (M-2) mean the corresponding acid halides (e.g., chloride, bromide, iodide), acid anhydrides (e.g., mixed acid anhydride with formic acid or acetic acid), active esters (e.g., succinimide ester), and the like, and include acylating agents used for the usual acylation of amino group.

For example, an acid halide is obtained by reacting the compound (M-2) with a thionyl halide (e.g., thionyl chloride), phosphorous halide (e.g., phosphorous trichloride, phosphorous pentachloride), oxalyl halide (e.g., oxalyl chloride), and the like, in accordance with known methods as described in the literatures (e.g., Shin-Jikken-Kagaku-Koza, Vol. 14, 1787 (1978); Synthesis 852-854 (1986); Shin-Jikken-Kagaku-Koza Vol. 22, 115 (1992)).

The reaction can be conducted under a condition generally used for the acylation of amino group. For example, in the case of condensation with the acid halide, the reaction is carried out in a solvent such as an ether solvent

(e.g., diethyl ether, tetrahydrofuran, dioxane), benzene solvent (e.g., benzene, toluene, xylene), halogenated hydrocarbon solvent (e.g., dichloromethane, dichloroethane, chloroform) as well as ethyl acetate, dimethylformamide, dimethyl sulfoxide, acetonitrile, or the like, if necessary, in the presence of a
5 base (e.g., organic base such as triethylamine, pyridine, N,N-dimethylaminopyridine, N-methylmorpholine; inorganic base such as sodium hydroxide, potassium hydroxide, potassium carbonate, or the like) under cooling, at room temperature, or under heating, preferably at a temperature ranging from -20 °C to ice-cooling temperature, or from a room temperature to
10 a refluxing temperature of the reaction system, for a period of several min to several hr, preferably for 0.5 hr to 24 hr, particularly, for 1 hr to 12 hr.

In the case of using the carboxylic acid (M-2) in a free form without converting into the reactive derivatives, the reaction is conducted in the presence of a condensing agent (e.g., dicyclohexylcarbodiimide (DCC), 1-
15 ethyl-3-(3-methylaminopropyl)carbodiimide, N,N'-carbonyldiimidazole) usually used in the condensation reaction of amine and carboxylic acid.

When "optionally substituted aryl" or "optionally substituted heteroaryl" in X¹ or X³ of the compound of the formula (M-2) is substituted with a hydroxy group or an amino group, such a compound can be used after
20 protection by acetyl group or the like in accordance with the well known method.

In the reaction of the other reactive derivatives or free acid (M-2) with the amine (M-1), the reaction conditions are determined according to the property of each reactive derivative or free acid, in accordance with a known
25 method. The reaction product can be purified in accordance with a conventional purification, such as the extraction with a solvent, chromatography, recrystallization, and the like.

When p is 0, a group of the formula: $\text{-NHCO-X}^1\text{-X}^2\text{-X}^3$ of the compound (I) can be introduced by reacting a carboxylic acid of the formula: $\text{X}^3\text{-X}^2\text{-X}^1\text{-COOH}$ (M-2) or its reactive derivative with amine (M-1), or by reacting a carboxylic acid having X^1 or its reactive derivatives with amine (M-1) and
5 reacting the obtained compound with a compound having X^3 .

In case of the introduction of a substituent(s) into the "optionally substituted aryl" or "optionally substituted heteroaryl", the change of the functional group can be performed before or after reacting a carboxylic acid or its reactive derivative thereof (M-2) with the amine (M-1). For example, the
10 compound having an aromatic heterocycle substituted with a nitro group can be prepared through the nitration of the compound with a nitrating acid. Moreover, the compound having an aromatic heterocycle substituted with an amino group can be prepared through the reduction of the above-obtained compound with tin in the presence of hydrochloride. Moreover, the
15 compound having an aromatic heterocycle substituted with hydroxy group can be prepared through the diazonization of the above-obtained compound and the hydrolysis with alkali. On the other hand, the compound having an aromatic heterocycle substituted with an alkoxy group can be prepared through the reaction of the diazonium derivative with alcohol. The
20 compound having an aromatic heterocycle substituted with halogen can be prepared through Sandmeyer reaction, the reaction of the diazonium derivative with a copper salt (e.g., CuCl_2 , CuBr_2). The compound having an aromatic heterocycle substituted with halogen can be also prepared through the direct reaction of the compound having an aromatic heterocycle with
25 chlorine and the like. Using the above-mentioned methods appropriately, halogen can be introduced into a desired position(s). The group of alkyl, alkenyl or acyl group can be directly introduced into an aromatic heterocycle

through Friedel Crafts reaction with alkylating agent, an alkenylating agent, or an acylating agent, respectively, in the presence of anhydrous aluminum chloride.

5 The objective compound (I) of the present invention can be converted into a corresponding ester derivative, if desired. For example, the ester derivative can be prepared by esterification of a carboxylic acid in accordance with a known method.

10 When using the compound (I) of the present invention in treatment, it can be formulated into ordinary formulations for oral and parenteral administration. A pharmaceutical composition containing the compound (I) of the present invention can be in the form for oral and parenteral administration. Specifically, it can be formulated into formulations for oral
15 administration such as tablets, capsules, granules, powders, syrup, and the like; or those for parenteral administration such as injectable solution or suspension for intravenous, intramuscular, or subcutaneous injection, inhalant, eye drops, nasal drops, suppositories, or percutaneous formulations such as ointment.

20 In preparing the formulations, carriers, excipients, solvents, and bases known to one having ordinary skill in the art may be used. In case of tablets, they are prepared by compressing or formulating an active ingredient together with auxiliary components. Examples of usable auxiliary components include pharmaceutically acceptable excipients such as binders
25 (e.g., cornstarch), fillers (e.g., lactose, microcrystalline cellulose), disintegrants (e.g., starch sodium glycolate) or lubricants (e.g., magnesium stearate). Tablets may be coated appropriately. In case of liquid

formulations such as syrups, solutions, or suspensions, they may contain suspending agents (e.g., methyl cellulose), emulsifiers (e.g., lecithin), preservatives, and the like. In case of injectable formulations, it may be in the form of solution, suspension, or oily or aqueous emulsion, which may contain suspension-stabilizing agents or dispersing agent, and the like. In case of an inhalant, it is formulated into a liquid formulation applicable to an inhaler. In case of eye drops, it is formulated into a solution or a suspension.

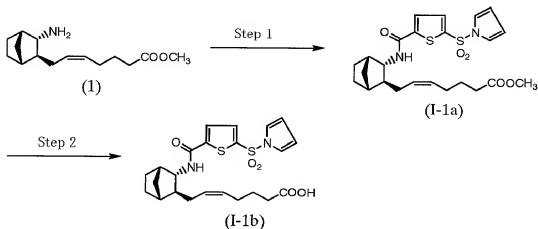
Especially, in case of a nasal drug for treating nasal blockage, it can be used as a solution or suspension prepared by a conventional formulating method, or administered as a powder formulated using a powdering agent (e.g., hydroxypropyl cellulose, carbopole) into the nasal cavity. Alternatively, it can be used as an aerosol filled into a special container together with a solvent of low boiling point.

Although an appropriate dosage of the compound (I) varies depending on the administration route, age, body weight, sex, or conditions of the patient, and the kind of drug(s) used together, if any, and should be determined by the physician in the end, in the case of oral administration, the daily dosage can generally be between 0.01 - 100 mg, preferably 0.01 - 10 mg, more preferably 0.01 - 1 mg, per kg body weight. In case of parenteral administration, the daily dosage can generally be between 0.001 - 100 mg, preferably 0.001 - 1 mg, more preferably 0.001 - 0.1 mg, per kg body weight. The daily dosage can be administered in 1 - 4 divisions.

The following examples are provided to further illustrate the present invention and are not to be construed as limiting the scope.

Example 1

Preparation of (5Z)-7-[(1R,2S,3S,4S)-3-[5-(pyrrol-1-ylsulfonyl)-thiophen-2-ylcarbonylamino]-bicyclo[2.2.1]hept-2-yl]-5-heptenoic acid (I-1b)



(Step 1)

To a solution of 251 mg (1.0 mmol) of (5Z)-7-[(1R,2S,3S,4S)-3-aminobicyclo[2.2.1]hept-2-yl]-5-heptenoic acid methyl ester (1) in 4 ml of tetrahydrofuran were added 257 mg (1.0 mmol) of 5-(pyrrol-1-ylsulfonyl)-thiophen-2-carboxylic acid and 13.5mg (0.1 mmol) of 1-hydroxybenzotriazole. Under ice-cooling, 186mg (1.2mmol) of 1-ethyl-3-(3-dimethylaminopropyl)-carbodiimide was added thereto. The mixture was warmed to room temperature and stirred at 25 °C for 16 h. The mixture was diluted with water and extracted with toluene. The organic layer was washed with dilute hydrochloric acid and water, dried over anhydrous magnesium sulfate, and concentrated under reduced pressure. The residue was chromatographed on silica gel (toluene/ethyl acetate = 6 : 1) to give 412 mg of (5Z)-7-[(1R,2S,3S,4S)-3-[5-(pyrrol-1-ylsulfonyl)-thiophen-2-ylcarbonylamino]-bicyclo[2.2.1]hept-2-yl]-5-heptenoic acid methyl ester (I-1a). Yield 83.9 %. Colorless oil.

300MHz ¹H-NMR(CDCl₃) δ: 1.08 (1H, m), 1.16-1.32 (2H, m), 1.56-1.73 (4H, m), 1.98-2.13 (5H, m), 2.31 (2H, t, J=7.2Hz), 2.56 (1H, m), 3.63 (3H, s), 3.79 (1H, m), 5.30-5.45 (2H, m), 6.28 (1H, d, J=7.5Hz), 6.33 and 7.16 (each 2H, each t, each

J=2.1Hz), 7.40 and 7.57 (each 1H, each d, each J=3.9Hz).

(Step 2)

To a solution of 350mg (0.713mmol) of (5Z)-7-{{(1R,2S,3S,4S)-3-[5-(pyrrol-1-ylsulfonyl)thiophen-2-ylcarbonylamino]-bicyclo[2.2.1]hept-2-yl}-5-heptenoic acid methyl ester (I-1a) in 1 ml of methanol and 0.5 ml of tetrahydrofuran was added under ice-cooling 0.5 ml (2.0 mmol) of 4N sodium hydroxide. The mixture was warmed to room temperature and stirred at 25 °C for 2 h. The reaction mixture was diluted with water and washed with ether. The aqueous layer was acidified with 0.5 ml of 5N hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried over anhydrous magnesium sulfate, and concentrated under reduced pressure. The residue was recrystallized from ethyl acetate/hexane (3 : 4) to give 234 mg of (5Z)-7-{{(1R,2S,3S,4S)-3-[5-(pyrrol-1-ylsulfonyl)-thiophen-2-ylcarbonylamino]-bicyclo[2.2.1]hept-2-yl}-5-heptenoic acid (I-1b) as needles.

Yield 68.8 %. Mp. 113-114 °C.

300MHz ¹H-NMR(CDCl₃) δ: 1.09(1H, m), 1.17-1.32(2H, m), 1.34-1.52(2H, m), 1.56-1.75(4H, m), 2.00-2.18(5H, m), 2.35(2H, t, J=7.2Hz), 2.52(1H, m), 3.80(1H, m), 5.31-5.43(2H, m), 6.22(1H, d, J=6.0Hz), 6.35 and 7.17(each 2H, each t, each J=2.1Hz), 7.37 and 7.56(each 1H, each d, each J=3.9Hz).

IR(Nujol): 3369, 3143, 3124, 3068, 2678, 1710, 1626, 1593, 1374, 1200, 1171 cm⁻¹.

[α]_D^{26.5}+75.5±1.2° (c=1.004, MeOH)

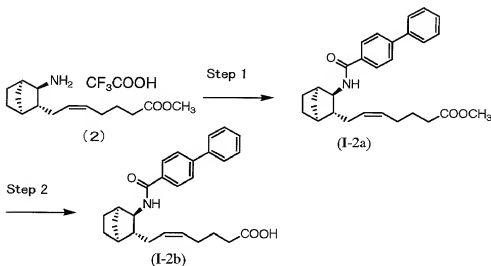
Elemental Analysis (C₂₃H₂₃N₂O₆S₂)

Calcd. (%): C, 57.96; H, 5.92; N, 5.88; S, 13.45

Found (%): C, 57.99; H, 5.88; N, 5.66; S, 13.50

Example 2

Preparation of (5Z)-7-[(1S,2R,3R,4R)-3-(4-biphenyl)carbonylamino-bicyclo[2.2.1]hept-2-yl]-5-heptenoic acid (I-2b)



(Step 1)

Methyl (5Z)-7-[(1S,2R,3R,4R)-3-aminobicyclo[2.2.1]hept-2-yl]-5-heptenoate trifluoroacetate (2) (232 mg, 0.636 mmol), which was prepared by the method described in Reference Example 4 of the Japanese Patent Publication (Kokoku) No. 79060/1993, was dissolved in methylene chloride (5 ml). To the solution were added triethylamine (0.279 ml, 2.00 mmol) and 4-biphenylcarbonyl chloride under ice-cooling and stirred for 7 h at the same temperature. The reaction mixture was purified by column chromatography on silica gel (ethyl acetate/hexane (1:4)) to yield methyl (5Z)-7-[(1S, 2R, 3R, 4R)-3-(4-biphenyl)carbonylamino-bicyclo[2.2.1]hept-2-yl]-5-heptenoate (I-2b) (221 mg, 0.512 mmol).

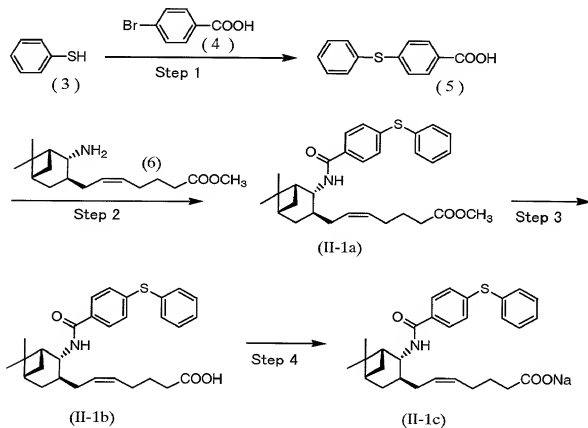
(Step2)

The compound (I-2a) (190 mg, 0.440 mmol) was dissolved in methanol (6 ml). To the solution was added 1 N KOH (1.10 ml, 1.10 mmol) under ice-cooling and stirred for 15 h at room temperature. The reaction mixture was concentrated in vacuo. The residue, after the addition of water (20 ml) and 1 N HCl (2 ml), was extracted with ethyl acetate. The organic layer was

washed with saturated brine, dried over anhydrous sodium sulfate and concentrated. The residue was purified by column chromatography on silica gel (ethyl acetate/hexane (1:1) containing 0.3% acetic acid) to yield (5Z)-7-[(1S, 2R,3R,4R)-3-(4-biphenyl)carbonylamino]bicyclo[2.2.1]hept-2-yl]-5-heptenoic acid (I-2b) (172 mg, 0.412 mmol). Yield 94%.

Example 3

Preparation of Sodium (5Z)-7-[(1R,2R,3S,5S)-2-(4-phenylthio)benzoylamino-10-norpinan-3-yl]-5-heptenoate (II-1c)



(Step 1)

A mixture of 4.06 g (37 mmol) of thiophenol (3), 7.07 g (35 mmol) of 4-bromobenzoic acid (4), and 2.67 g (18.7 mmol) of copper oxide in 18 ml of quinoline was stirred under nitrogen gas at 190 °C for 1 h. The reaction mixture, cooled at 110 °C was added to 52 ml of 6N hydrochloric acid. The

resulting precipitate was washed with 6N hydrochloric acid and water and recrystallized from ethyl acetate/hexane to yield 4.28g of the compound (5). Mp. 178-179°C. Yield 53%.

$^1\text{H-NMR}(\text{CDCl}_3)$ δ : 7.21(2H,d,J=8.7Hz), 7.40-7.42(3H,m), 7.50-

5 7.53(2H,m), 7.95(2H,d,J=8.7Hz).

IR(Nujol): 3523, 3062, 3007, 2884, 2670, 2549, 1730, 1690, 1595, 1561, 1491 cm^{-1}

This preparation was carried out according to D. Hands, H. Marley, S. J. Skittrall and S. HB. Wright, *J. Heterocyclic Chem.*, 23, 1333 (1986). (Step2)

10 To a solution of 1.83 g (6.56 mmol) of methyl (5Z)-7-[(1R,2R,3S,5S)-2-amino-10-norpinan-3-yl]-5-heptenoate (6) in 3 ml of tetrahydrofuran were added 1.51 g (6.56 mmol) of 4-phenylthiobenzoic acid (5), 88 mg of 1-hydroxy benzotriazole and 1.32 g (8.53 mmol) of 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide. The mixture was allowed to stand at
15 room temperature over night. The reaction mixture was diluted by diluted hydrochloric acid and extracted with toluene. The organic layer was washed with water, dried over anhydrous magnesium sulfate and concentrated under reduced pressure. The obtained residue was purified by column chromatography on silica gel (ethyl acetate/hexane (1:1)) to yield 3.181 g of
20 the compound (II-1a) as oil. Yield: 98.4 %.

$[\alpha]_{\text{D}}^{22} + 61.8^\circ$ ($c=1.00, \text{CH}_3\text{OH}$)

Elemental Analysis ($\text{C}_{20}\text{H}_{27}\text{NO}_3\text{S}$)

Calcd. (%): C, 73.28; H, 7.59; N, 2.85; S, 6.52

Found (%): C, 73.02; H, 7.63; N, 2.91; S, 6.53

25 $^1\text{H-NMR}(\text{CDCl}_3)$ δ : 0.96(1H,d,J=10.5Hz), 1.10 and 1.22(each 3H, eachs), 1.49-

1.73(3H,m), 1.83-2.45(11H,m), 3.62(3H,s), 4.27(1H,m), 5.32-

5.49(2H,m), 6.19(1H,d,J=8.1Hz), 7.26(2H,d,J=8.4Hz), 7.34-

7.46(5H,m), 7.62(2H,d,J=8.4Hz)

IR(CHCl₃): 3453, 3030, 3015, 2924, 2870, 1730, 1652, 1595, 1583, 1557, 1513, 1480 cm⁻¹

1

(Step 3)

5 To a solution of 3.181 g (6.47 mmol) of the compound (II-1a) in 32 ml of methanol was added 5.7 ml (22.6 mmol) of 4N sodium hydroxide. The mixture was stirred at 45 °C for 4.5 h. The mixture was neutralized with 1N hydrochloric acid and extracted with ethyl acetate. The organic layer was washed with water, dried over anhydrous magnesium sulfate, and
10 concentrated under reduced pressure to yield 3.113 g of the compound (II-1b) as a colorless amorphous. Yield 99.5%.

[α]_D²²+61.0° (c=1.01, CH₃OH)

Elemental Analysis (C₂₉H₃₅NO₃S·0.1H₂O)

Calcd.(%): C, 72.65; H, 7.48; N, 2.92; S, 6.69

15 Found(%): C, 72.50; H, 7.45; N, 3.19; S, 6.69

¹H-NMR(CDCl₃) δ: 0.96(1H,d,J=10.2Hz), 1.10 and 1.22(each 3H, each s), 1.51-

1.79(3H,m), 1.83-2.44(11H,m), 4.26(1H,m), 5.33-

5.49(2H,m), 6.21(1H,d,J=8.7Hz), 7.25(2H,d,J=9.0Hz), 7.34-

7.47(5H,m), 7.60(2H,d,J=9.0Hz)

20 IR(CHCl₃): 3453, 3062, 3029, 3014, 2925, 2870, 1739, 1708, 1651, 1595, 1583, 1557, 1515, 1481 cm⁻¹

(Step 4)

To a solution of 3.113 g (6.5 mmol) of the above obtained compound (II-1b) in 30 ml of methanol was added 6.2 ml of 1 N sodium hydroxide. The
25 mixture was concentrated under reduced pressure. The residue was dissolved in a small amount of ethyl acetate and mixed with hexane. The insoluble product was dissolved in 60 ml of water and freeze-dried to yield

3.138 g of the compound (II-1c) as a colorless amorphous. Yield 96.4 %.

$[\alpha]_D^{25} + 47.0^\circ$ ($c=1.00, \text{CH}_3\text{OH}$)

Elemental Analysis ($\text{C}_{29}\text{H}_{34}\text{NO}_3\text{SNa}\cdot\text{H}_2\text{O}$)

Calcd. (%): C, 67.29; H, 7.01; N, 2.71; S, 6.19; Na, 4.44

5 Found(%): C, 67.17; H, 7.00; N, 2.75; S, 6.29; Na, 4.35

$^1\text{H-NMR}(\text{CD}_3\text{OD})$ δ : 0.964(1H, d, $J=9.9\text{Hz}$), 1.13 and 1.22(each 3H, eachs), 1.54-

1.69(3H, m), 1.94-2.39(11H, m), 4.12(1H, bs), 5.38-

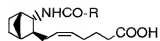
5.49(2H, m), 7.25(1H, d, $J=8.4\text{Hz}$), 7.36-7.46(5H, m), 7.68(2H, d, $J=8.4\text{Hz}$)

IR(KBr): 3435, 3058, 2985, 2921, 2867, 1635, 1595, 1562, 1522, 1482, 1439, 1412 cm^{-1}

10

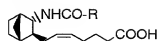
The structure and physical property of the compound prepared in accordance with the above examples are shown below.

Table 1



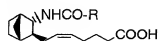
Comp. No.	R	Comp. No.	R
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I-4		I-14	
I-5		I-15	
I-6		I-16	
I-7		I-17	
I-8		I-18	
I-9		I-19	
I-10		I-20	
I-11		I-21	
I-12		I-22	

Table 2



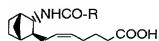
Comp. No.	R	Comp. No.	R
I-23		I-33	
I-24		I-34	
I-25		I-35	
I-26		I-36	
I-27		I-37	
I-28		I-38	
I-29		I-39	
I-30		I-40	
I-31		I-41	
I-32		I-42	

Table 3



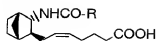
Comp. No.	R	Comp. No.	R
I-43		I-53	
I-44		I-54	
I-45		I-55	
I-46		I-56	
I-47		I-57	
I-48		I-58	
I-49		I-59	
I-50		I-60	
I-51		I-61	
I-52		I-62	

Table 4



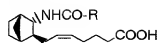
Comp. No.	R	Comp. No.	R
I-63		I-73	
I-64		I-74	
I-65		I-75	
I-66		I-76	
I-67		I-77	
I-68		I-78	
I-69		I-79	
I-70		I-80	
I-71		I-81	
I-72		I-82	

Table 5



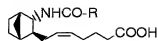
Comp. No.	R	Comp. No.	R
I-83		I-93	
I-84		I-94	
I-85		I-95	
I-86		I-96	
I-87		I-97	
I-88		I-98	
I-89		I-99	
I-90		I-100	
I-91		I-101	
I-92		I-102	

Table 6



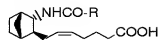
Comp. No.	R	Comp. No.	R
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I-104		I-114	
I-105		I-115	
I-106		I-116	
I-107		I-117	
I-108		I-118	
I-109		I-119	
I-110		I-120	
I-111		I-121	
I-112		I-122	

Table 7



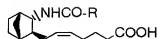
Comp. No.	R	Comp. No.	R
I-123		I-133	
I-124		I-134	
I-125		I-135	
I-126		I-136	
I-127		I-137	
I-128		I-138	
I-129		I-139	
I-130		I-140	
I-131		I-141	
I-132		I-142	

Table 8



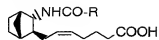
Comp. No.	R	Comp. No.	R
I-143		I-153	
I-144		I-154	
I-145		I-155	
I-146		I-156	
I-147		I-157	
I-148		I-158	
I-149		I-159	
I-150		I-160	
I-151		I-161	
I-152		I-162	

Table 9



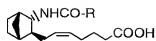
Comp. No.	R	Comp. No.	R
I-163		I-173	
I-164		I-174	
I-165		I-175	
I-166		I-176	
I-167		I-177	
I-168		I-178	
I-169		I-179	
I-170		I-180	
I-171		I-181	
I-172		I-182	

Table 10



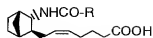
Comp. No.	R	Comp. No.	R
I-183		I-193	
I-184		I-194	
I-185		I-195	
I-186		I-196	
I-187		I-197	
I-188		I-198	
I-189		I-199	
I-190		I-200	
I-191		I-201	
I-192		I-202	

Table 11



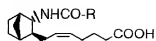
Comp. No.	R	Comp. No.	R
I-203		I-213	
I-204		I-214	
I-205		I-215	
I-206		I-216	
I-207		I-217	
I-208		I-218	
I-209		I-219	
I-210		I-220	
I-211		I-221	
I-212		I-222	

Table 12



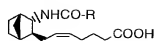
Comp. No.	R	Comp. No.	R
I-223		I-233	
I-224		I-234	
I-225		I-235	
I-226		I-236	
I-227		I-237	
I-228		I-238	
I-229		I-239	
I-230		I-240	
I-231		I-241	
I-232		I-242	

Table 13



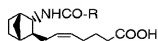
Comp. No.	R	Comp. No.	R
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I-244		I-254	
I-245		I-255	
I-246		I-256	
I-247		I-257	
I-248		I-258	
I-249		I-259	
I-250		I-260	
I-251		I-261	
I-252		I-262	

Table 14



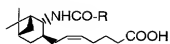
Comp. No.	R	Comp. No.	R
I-263		I-273	
I-264		I-274	
I-265		I-275	
I-266		I-276	
I-267		I-277	
I-268		I-278	
I-269		I-279	
I-270		I-280	
I-271		I-281	
I-272		I-282	

Table 15



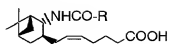
Comp. No.	R	Comp. No.	R
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I-284		I-290	
I-285		I-291	
I-286		I-292	
I-287		I-293	
I-288		I-294	

Table 16



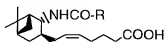
Comp. No.	R	Comp. No.	R
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II-3		II-13	
II-4		II-14	
II-5		II-15	
II-6		II-16	
II-7		II-17	
II-8		II-18	
II-9		II-19	
II-10		II-20	
II-11		II-21	

Table 17



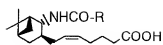
Comp. No.	R	Comp. No.	R
II-22		II-32	
II-23		II-33	
II-24		II-34	
II-25		II-35	
II-26		II-36	
II-27		II-37	
II-28		II-38	
II-29		II-39	
II-30		II-40	
II-31		II-41	

Table 18



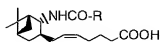
Comp. No.	R	Comp. No.	R
II-42		II-51	
II-43		II-52	
II-44		II-53	
II-45		II-54	
II-46		II-55	
II-47		II-56	
II-48		II-57	
II-49		II-58	
II-50		II-59	
		II-60	

Table 19



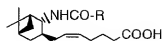
Comp. No.	R	Comp. No.	R
II-61		II-71	
II-62		II-72	
II-63		II-73	
II-64		II-74	
II-65		II-75	
II-66		II-76	
II-67		II-77	
II-68		II-78	
II-69		II-79	
II-70		II-80	

Table 20



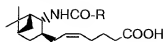
Comp. No.	R	Comp. No.	R
II-81		II-91	
II-82		II-92	
II-83		II-93	
II-84		II-94	
II-85		II-95	
II-86		II-96	
II-87		II-97	
II-88		II-98	
II-89		II-99	
II-90		II-100	

Table 21



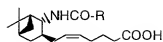
Comp. No.	R	Comp. No.	R
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II-102		II-112	
II-103		II-113	
II-104		II-114	
II-105		II-115	
II-106		II-116	
II-107		II-117	
II-108		II-118	
II-109		II-119	
II-110		II-120	

Table 22



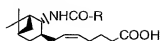
Comp. No.	R	Comp. No.	R
II-121		II-131	
II-122		II-132	
II-123		II-133	
II-124		II-134	
II-125		II-135	
II-126		II-136	
II-127		II-137	
II-128		II-138	
II-129		II-139	
II-130		II-140	

Table 23



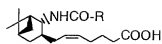
Comp. No.	R	Comp. No.	R
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II-142		II-152	
II-143		II-153	
II-144		II-154	
II-145		II-155	
II-146		II-156	
II-147		II-157	
II-148		II-158	
II-149		II-159	
II-150		II-160	

Table 24



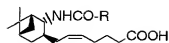
Comp. No.	R	Comp. No.	R
II-161		II-171	
II-162		II-172	
II-163		II-173	
II-164		II-174	
II-165		II-175	
II-166		II-176	
II-167		II-177	
II-168		II-178	
II-169		II-179	
II-170		II-180	

Table 25



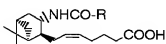
Comp. No.	R	Comp. No.	R
II-181		II-191	
II-182		II-192	
II-183		II-193	
II-184		II-194	
II-185		II-195	
II-186		II-196	
II-187		II-197	
II-188		II-198	
II-189		II-199	
II-190		II-200	

Table 26



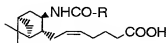
Comp. No.	R	Comp. No.	R
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II-202		II-204	

Table 27



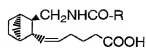
Comp. No.	R	Comp. No.	R
III-1		III-3	
III-2		III-4	

Table 28



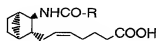
Comp. No.	R	Comp. No.	R
IV-1		IV-2	

Table 29



Comp. No.	R	Comp. No.	R
V-1		V-7	
V-2		V-8	
V-3		V-9	
V-4		V-10	
V-5		V-11	
V-6		V-12	

Table 30



Comp. No.	R
VI-1	

Physical property

Compound I-3

300MHz ^1H -NMR(CDCl_3 - CD_3OD) δ : 1.23(1H, m), 1.28-1.32(2H, m), 1.44-1.53(2H, m), 1.57-1.74(4H, m), 2.03-2.14(5H, m), 2.32(2H, t, $J=7.2\text{Hz}$), 2.56(1H, m), 3.82(1H, m), 5.33-5.47(2H, m), 6.80(1H, m), 7.09-7.12(2H, m), 7.22(1H, t, $J=8.1\text{Hz}$), 7.63 and 7.86(each 1H, each d, each $J=8.1\text{Hz}$).

IR(CHCl_3): 3593 3442, 3111, 1710, 1644, 1519, 1449 cm^{-1} .

$[\alpha]_{\text{D}}^{25}+77.6\pm 1.2^\circ$ ($c=1.010$, MeOH)

Elemental Analysis ($\text{C}_{25}\text{H}_{29}\text{NO}_4\text{S}\cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 67.76; H, 6.69; N, 3.16; S, 7.23

Found(%): C, 67.64; H, 6.77; N, 3.17; S, 7.18

Compound I-4

300MHz ^1H -NMR(CDCl_3) δ : 1.06(1H, m), 1.17-1.32(2H, m), 1.40-1.50(2H, m), 1.56-1.80(4H, m), 2.00-2.22(5H, m), 2.33(2H, t, $J=7.2\text{Hz}$), 2.53(1H, m), 3.84(3H, s), 3.85(1H, m), 5.29-5.42(2H, m), 6.18(1H, d, $J=6.9\text{Hz}$), 6.93, 7.10, 7.44 and 7.59(each 2H, each d-like).

IR(CHCl_3): 3516, 3448, 1708, 1650, 1594, 1514, 1494, 1483, 1288, 1248, 1032 cm^{-1} .

$[\alpha]_{\text{D}}^{25}+82.8\pm 1.2^\circ$ ($c=1.000$, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{33}\text{NO}_4\text{S}\cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 69.59; H, 6.97; N, 2.90; S, 6.64

Found(%): C, 69.69; H, 6.93; N, 3.20; S, 6.57

Compound I-5

300MHz ^1H -NMR(CDCl_3) δ : 1.06(1H, m), 1.16-1.32(2H, m), 1.36-1.50(2H, m), 1.54-1.80(4H, m), 2.00-2.22(5H, m), 2.34(2H, t, $J=7.2\text{Hz}$), 2.53(1H, m), 3.82(1H, m), 3.83(3H, s), 5.29-5.42(2H, m), 6.14(1H, d, $J=7.2\text{Hz}$), 6.92(2H, d-like), 7.20-7.30(2H, m), 7.41-7.51(4H, m).

IR(CHCl₃): 3509, 3444, 2666, 1708, 1654, 1592, 1570, 1510, 1494, 1468, 1288, 1247, 1082 cm⁻¹.

$[\alpha]_D^{26} + 58.4 \pm 1.4^\circ$ (c=0.704, MeOH)

Elemental Analysis (C₂₅H₃₃NO₄S·0.2H₂O)

5 Calcd.(%): C, 69.59; H, 6.97; N, 2.90; S, 6.64

Found(%): C, 69.55; H, 6.93; N, 3.03; S, 6.57

Compound I-6

300MHz ¹H-NMR(CDCl₃) δ: 1.11(1H, m), 1.20-1.34(2H, m), 1.42-1.52(2H, m), 1.56-1.78(4H, m), 2.00-2.23(5H, m), 2.35(2H, t, J=7.2Hz), 2.57(1H, m), 3.89(1H, m), 5.31-5.45(2H, m), 6.30(1H, d, J=7.2Hz), 6.37 and 7.12(each 2H, each 2H, each J=2.1Hz), 7.42 and 7.83(each 2H, each d-like).

IR(CHCl₃): 3518, 3448, 2662, 1708, 1653, 1609, 1499, 1334 cm⁻¹.

$[\alpha]_D^{23} + 94.9 \pm 1.3^\circ$ (c=1.005, MeOH)

Elemental Analysis (C₂₅H₃₀N₂O₃·0.1H₂O)

15 Calcd.(%): C, 73.54; H, 7.45; N, 6.86

Found(%): C, 73.43; H, 7.46; N, 7.01

Compound I-7

300MHz ¹H-NMR(CDCl₃) δ: 1.12-1.76(9H, m), 1.96-2.24(5H, m), 2.33(2H, t, J=7.2Hz), 2.53(1H, m), 3.86(1H, m), 5.30-5.47(2H, m), 6.60(1H, d, J=6.9Hz), 7.05-7.23(5H, m), 7.55(1H, brs), 7.67 and 7.74(each 2H, each d, each J=8.7Hz).

IR(CHCl₃): 3516, 3439, 3368, 1708, 1653, 1600, 1519, 1496, 1487, 1401, 1347, 1165 cm⁻¹.

$[\alpha]_D^{25} + 69.9 \pm 1.1^\circ$ (c=1.019, MeOH)

Elemental Analysis (C₂₇H₃₄N₂O₅S·0.1H₂O)

25 Calcd.(%): C, 64.80; H, 6.89; N, 5.60; S, 6.41

Found(%): C, 64.73; H, 6.56; N, 5.74; S, 6.41

Compound I-8

300MHz ^1H -NMR(CDCl_3) δ : 1.19-1.27(3H, m), 1.35-1.43(2H, m), 1.55-1.80(4H, m), 1.90-2.08(3H, m), 2.11-2.21(2H, m), 2.34(2H, t, $J=7.2\text{Hz}$), 2.53(1H, m), 3.74(1H, m), 5.29-5.48(2H, m), 6.44(1H, d, $J=6.9\text{Hz}$), 7.15(1H, d, $J=1.5\text{Hz}$), 7.46(2H, t, $J=7.8\text{Hz}$), 7.57(1H, m), 7.60(1H, d, $J=1.5\text{Hz}$), 7.76-7.78(2H, m), 7.89(1H, s).

IR(CHCl_3): 3440, 3360, 3107, 1708, 1637, 1518, 1448, 1329, 1163 cm^{-1} .

$[\alpha]_{\text{D}}^{20}+55.5\pm 1.0^\circ$ ($c=1.003$, MeOH)

Elemental Analysis ($\text{C}_{25}\text{H}_{30}\text{N}_2\text{O}_5\text{S}_2\cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 59.31; H, 6.05; N, 5.53; S, 12.67

Found(%): C, 59.19; H, 6.12; N, 5.66; S, 12.50

Compound I-9

mp.193-194 $^\circ\text{C}$

300MHz ^1H -NMR(d_6 -DMSO) δ : 1.18-1.59(9H, m), 1.93(1H, d, $J=2.4\text{Hz}$), 1.99-2.07(4H, m), 2.21(2H, t, $J=7.2\text{Hz}$), 2.36(1H, m), 5.30-5.40(2H, m), 7.25(1H, d, $J=1.5\text{Hz}$), 7.54-7.63(3H, m), 7.69(1H, d, $J=1.5\text{Hz}$), 7.99-8.02(3H, m), 11.6(1H, s), 12.00(1H, brs).

IR(Nujol): 3367, 3221, 3186, 3091, 3055, 2654, 1711, 1631, 1566, 1541, 1321 cm^{-1} .

$[\alpha]_{\text{D}}^{21}+74.6\pm 1.1^\circ$ ($c=1.006$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{30}\text{N}_2\text{O}_4\text{S}$)

Calcd.(%): C, 66.93; H, 6.48; N, 6.00; S, 6.87

Found(%): C, 66.76; H, 6.44; N, 5.88; S, 6.76

Compound I-10

300MHz ^1H -NMR(CDCl_3) δ : 1.08(1H, m), 1.18-1.34(2H, m), 1.40-1.50(2H, m), 1.56-1.77(4H, m), 2.00-2.20(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.55(1H, m), 3.86(1H, m), 5.31-5.54(2H, m), 6.26(1H, d, $J=7.8\text{Hz}$), 6.31 and 7.14(each 2H, each t, each $J=2.1\text{Hz}$), 7.84 and 7.88(each 2H, each d, each $J=8.4\text{Hz}$).

IR(CHCl₃): 3515, 3441, 3144, 2669, 1708, 1662, 1515, 1486, 1455, 1376 cm⁻¹.

[α]_D²²+77.4 \pm 1.2° (c=1.004, MeOH)

Elemental Analysis (C₂₈H₃₀N₂O₅S·0.2H₂O)

Calcd.(%): C, 63.32; H, 6.46; N, 6.91; S, 6.76

5 Found(%): C, 63.23; H, 6.49; N, 5.88; S, 6.67

Compound I-11

300MHz ¹H-NMR(CDCl₃) δ : 1.06(1H, m), 1.18-1.29(2H, m), 1.42-1.46(2H, m),
1.56-1.79(4H, m), 2.03-2.20(5H, m), 2.34(2H, t, J=7.2Hz), 2.52(1H, m), 3.82(1H,
m), 4.12(2H, s), 5.29-5.43(2H, m), 6.04(1H, d, J=7.5Hz), 7.09(1H, d, J=1.5Hz),
10 7.22-7.34(5H, m), 7.67(1H, d, J=1.5Hz).

IR(CHCl₃): 3517, 3446, 2669, 1708, 1647, 1549, 1508, 1454 cm⁻¹.

[α]_D^{21.5}+68.8 \pm 1.1° (c=1.016, MeOH)

Elemental Analysis (C₂₈H₃₁NO₅S·0.1H₂O)

Calcd.(%): C, 71.07; H, 7.16; N, 3.19; S, 7.30

15 Found(%): C, 71.05; H, 7.11; N, 3.38; S, 7.33

Compound I-12

300MHz ¹H-NMR(CDCl₃) δ : 1.09(1H, m), 1.10-1.30(2H, m), 1.40-1.46(2H, m),
1.56-1.77(4H, m), 2.00-2.22(5H, m), 2.33(2H, t, J=7.2Hz), 2.52(1H, m), 3.83(1H,
m), 5.28-5.42(2H, m), 6.26(1H, d, J=6.9Hz), 7.15 and 7.63(each 2H, each d,
20 each J=8.7Hz), 7.53(1H, m), 7.78-7.82(2H, m).

IR(CHCl₃): 3515, 3446, 3371, 3138, 1708, 1648, 1610, 1496, 1163 cm⁻¹.

[α]_D^{22.5}+66.5 \pm 1.1° (c=1.004, MeOH)

Elemental Analysis (C₂₇H₃₄N₂O₅S·0.4H₂O)

Calcd.(%): C, 64.11; H, 6.93; N, 5.54; S, 6.34

25 Found(%): C, 64.05; H, 6.63; N, 5.56; S, 6.12

Compound I-13

300MHz ¹H-NMR(CDCl₃) δ : 1.19-1.31(3H, m), 1.36-1.44(2H, m), 1.55-1.78(4H,

m), 1.85-2.02(2H, m), 2.05(1H, m), 2.13-2.47(4H, m), 2.57(1H, m), 3.71(1H, m), 5.31-5.54(2H, m), 6.53(1H, d, $J=6.9\text{Hz}$), 7.14-7.32(5H, m), 7.47(1H, br), 8.05 and 8.13(each 1H, each d, each $J=1.5\text{Hz}$).

IR(CHCl_3): 3509, 3360, 3262, 1709, 1649, 1542, 1496, 1349, 1160 cm^{-1} .

5 $[\alpha]_{\text{D}^{23}}+59.1\pm 1.1^\circ$ ($c=1.001$, MeOH)

Elemental Analysis ($\text{C}_{25}\text{H}_{30}\text{N}_2\text{O}_5\text{S}_2\cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 59.31; H, 6.05; N, 5.53; S, 12.67

Found(%): C, 59.17; H, 6.01; N, 5.49; S, 12.37

Compound I-14

10 300MHz ^1H -NMR(CDCl_3) δ : 1.18-1.32(3H, m), 1.38-1.47(2H, m), 1.55-1.78(4H, m), 1.90-2.08(3H, m), 2.15-2.31(2H, m), 2.32-2.49(2H, m), 2.59(1H, m), 3.74(1H, m), 5.33-5.53(2H, m), 6.35 and 7.17(each 2H, each t, each $J=2.4\text{Hz}$), 6.47(1H, d, $J=6.3\text{Hz}$), 8.21 and 8.22(each 1H, each d, each $J=1.5\text{Hz}$).

IR(CHCl_3): 3506, 3412, 3144, 3107, 1727, 1709, 1656, 1540, 1504, 1456, 1382,

15 1166 cm^{-1} .

$[\alpha]_{\text{D}^{23}}+63.8\pm 1.0^\circ$ ($c=1.005$, MeOH)

Elemental Analysis ($\text{C}_{23}\text{H}_{28}\text{N}_2\text{O}_5\text{S}_2\cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 57.53; H, 5.96; N, 5.83; S, 13.35

Found(%): C, 57.44; H, 5.96; N, 6.00; S, 13.35

20 Compound I-15

mp.128-130°C

300MHz ^1H -NMR(CDCl_3) δ : 1.16-1.34(3H, m), 1.40-1.81(6H, m), 2.37(2H, t, $J=7.2\text{Hz}$), 2.57(1H, m), 3.89(1H, m), 5.35-5.51(2H, m), 6.37 and 7.20(each 2H, each d, each $J=2.4\text{Hz}$), 7.23(1H, d, $J=8.7\text{Hz}$).

25 IR(Nujol): 3371, 3097, 2662, 1716, 1703, 1671, 1652, 1530, 1367, 1361, 1187, 1162 cm^{-1} .

$[\alpha]_{\text{D}^{25}}+47.5\pm 0.9^\circ$ ($c=1.003$, MeOH)

Elemental Analysis ($C_{23}H_{28}N_2O_5S_2$)

Calcd.(%): C, 57.96; H, 5.92; N, 5.88; S, 13.45

Found(%): C, 58.05; H, 5.91; N, 5.83; S, 13.38

Compound I-16

- 5 300MHz 1H -NMR($CDCl_3$) δ : 1.09(1H, m), 1.20-1.32(2H, m), 1.42-1.47(2H, m), 1.58-1.75(4H, m), 2.01(3H, d, $J=1.2$ Hz), 2.00-2.16(5H, m), 2.35(2H, t, $J=7.2$ Hz), 2.55(1H, m), 3.86(1H, m), 5.31-5.44(2H, m), 6.14(1H, dd, $J=1.5$ and 3.0Hz), 6.29(1H, d, $J=7.5$ Hz), 6.86(1H, m), 7.04(1H, t, $J=3.0$ Hz), 7.84(4H, s).
IR($CHCl_3$): 3517, 3441, 2667, 1708, 1661, 1515, 1485, 1375, 1260, 1178 cm^{-1} .

- 10 $[\alpha]_D^{25}+73.8\pm1.1^\circ$ ($c=1.001$, MeOH)

Elemental Analysis ($C_{26}H_{32}N_2O_5S\cdot0.1H_2O$)

Calcd.(%): C, 64.20; H, 6.67; N, 5.76; S, 6.59

Found(%): C, 64.14; H, 6.65; N, 5.85; S, 6.86

Compound I-17

- 15 300MHz 1H -NMR($CDCl_3$) δ : 1.20-1.31(3H, m), 1.40-1.47(2H, m), 1.57-1.80(4H, m), 2.00-2.30(5H, m), 2.37(2H, t, $J=6.9$ Hz), 2.60(1H, m), 3.84(1H, m), 5.32-5.50(2H, m), 6.32(2H, t, $J=2.4$ Hz), 6.63(1H, d, $J=6.6$ Hz), 7.16(2H, t, $J=2.4$ Hz), 7.55(1H, t, $J=8.0$ Hz), 7.89(1H, m), 8.06(1H, d, $J=7.8$ Hz), 8.30(1H, t, $J=1.7$ Hz).
IR($CHCl_3$): 3394, 3145, 1726, 1709, 1659, 1374 cm^{-1} .

- 20 $[\alpha]_D^{25}+60.3\pm1.0^\circ$ ($c=1.000$, MeOH)

Elemental Analysis ($C_{25}H_{30}N_2O_5S\cdot0.2H_2O$)

Calcd.(%): C, 63.32; H, 6.46; N, 5.91; S, 6.76

Found(%): C, 63.39; H, 6.50; N, 6.16; S, 6.80

Compound I-18

- 25 300MHz 1H -NMR($CDCl_3$) δ : 1.10(1H, m), 1.20-1.32(2H, m), 1.45(2H, t, $J=6.9$ Hz), 1.58-1.74(4H, m), 2.04-2.16(5H, m), 2.28(3H, s), 2.35(2H, t, $J=6.9$ Hz), 2.55(1H, m), 3.87(1H, m), 5.31-5.44(2H, m), 5.96(1H, m), 6.18(1H, t, $J=3.3$ Hz),

6.32(1H, d, J=7.5Hz), 7.25(1H, dd, J=1.8 and 3.3Hz), 7.78 and 7.85(each 2H, each d, each J=8.7Hz).

IR(CHCl₃): 3514, 3441, 1708, 1661, 1515, 1487, 1368, 1164 cm⁻¹.

[α]_D²⁵+74.0±1.1° (c=1.004, MeOH)

5 Elemental Analysis (C₂₆H₃₂N₂O₅S·0.2H₂O)

Calcd.(%): C, 63.96; H, 6.69; N, 5.74; S, 6.57

Found(%): C, 63.97; H, 6.69; N, 5.98; S, 6.54

Compound I-19

300MHz ¹H-NMR(CDCl₃) δ : 1.07(1H, m), 1.18-1.31(2H, m), 1.41-1.49(2H, m),

10 1.56-1.76(4H, m), 2.00-2.21(5H, m), 2.34(2H, t, J=7.2Hz), 2.55(1H, m), 3.86(1H, m), 5.09(2H, s), 5.29-5.43(2H, m), 6.19(2H, t, J=2.1Hz), 6.25(1H, d, J=7.5Hz), 6.67(2H, t, J=2.1Hz), 7.13 and 7.70(each 2H, each d, each J=8.4Hz).

IR(CHCl₃): 3517, 3446, 3103, 2667, 1708, 1653, 1523, 1497 cm⁻¹.

[α]_D²⁵+57.7±1.0° (c=1.010, MeOH)

15 Elemental Analysis (C₂₆H₃₂N₂O₅)

Calcd.(%): C, 73.63; H, 7.70; N, 6.60

Found(%): C, 73.72; H, 7.77; N, 6.76

Compound I-20

300MHz ¹H-NMR(CDCl₃) δ : 1.05(1H, m), 1.15-1.30(2H, m), 1.36-1.45(2H, m),

20 1.55-1.72(4H, m), 2.00-2.14(5H, m), 2.32(2H, t, J=7.2Hz), 2.51(1H, m), 3.82(1H, m), 5.28-5.42(2H, m), 6.22(2H, d, J=7.5Hz), 6.68(1H, d, J=3.6Hz), 7.22-7.34(2H, m), 7.52-7.55(2H, m), 7.76 and 7.88(each 2H, each d, each J=8.7Hz), 7.97(1H, d, J=8.1Hz).

IR(CHCl₃): 3510, 3480, 3440, 3145, 3117, 1708, 1661, 1516, 1485, 1445, 1377,

25 1130 cm⁻¹.

[α]_D²⁵+65.9±1.1° (c=1.010, MeOH)

Elemental Analysis (C₂₆H₃₂N₂O₅S·0.3H₂O)

Calcd.(%): C, 66.21; H, 6.25; N, 5.33; S, 6.10

Found(%): C, 66.34; H, 6.30; N, 5.63; S, 5.84

Compound I-21

300MHz ¹H-NMR(CDCl₃) δ: 1.13(1H, m), 1.20-1.31(2H, m), 1.44(2H, t,

5 J=6.8Hz), 1.59-1.72(4H, m), 2.03-2.20(5H, m), 2.32(2H, t, J=7.2Hz), 2.54(1H, m), 3.83(1H, m), 4.62(2H, s), 5.31-5.45(2H, m), 6.25-6.26(2H, m), 6.57(1H, d, J=7.2Hz), 7.25(1H, m), 7.81(4H, s).

IR(CHCl₃): 3581, 3518, 3440, 3149, 1708, 1660, 1517, 1486, 1371, 1150 cm⁻¹.

[α]_D²⁷+72.2±1.1° (c=1.007, MeOH)

10 Elemental Analysis (C₂₆H₃₂N₂O₆S)

Calcd.(%): C, 62.38; H, 6.44; N, 5.60; S, 6.40

Found(%): C, 62.17; H, 6.52; N, 5.71; S, 6.40

Compound I-22

300MHz ¹H-NMR(d₆-DMSO) δ: 1.18-1.33(3H, m), 1.43-1.60(6H, m), 1.92-

15 2.30(5H, m), 2.20(2H, t, J=7.5Hz), 2.38(1H, m), 3.67(1H, m), 5.30-5.36(2H, m), 6.85(1H, d, J=4.8Hz), 7.27(1H, d, J=4.8Hz), 7.86 and 7.94(each 2H, each d, each J=8.7Hz), 8.37(1H, d, J=6.9Hz).

IR(KBr): 3360, 3151, 3103, 1707, 1635, 1569, 1530, 1328, 1284, 1140 cm⁻¹.

[α]_D²⁷+67.4±1.1° (c=1.007, DMSO)

20 Elemental Analysis (C₂₄H₂₉N₃O₅S₂·0.3H₂O)

Calcd.(%): C, 56.62; H, 5.86; N, 8.24; S, 12.60

Found(%): C, 56.74; H, 5.96; N, 8.30; S, 12.31

Compound I-23

mp.231-232°C

25 300MHz ¹H-NMR(d₆-DMSO) δ: 1.19-1.61(9H, m), 1.95-2.08(5H, m), 2.21(2H, t, J=7.2Hz), 2.40(1H, m), 3.71(1H, m), 5.34-5.37(2H, m), 7.31 and 7.59(each 1H, each d, each J=3.6Hz), 7.98 and 8.16(each 2H, each d, each J=8.7Hz), 8.41(1H,

d, $J=7.2\text{Hz}$).

IR(KBr): 3336, 3185, 2541, 1675, 1631, 1548, 1324, 1295, 1163 cm^{-1} .

$[\alpha]_{\text{D}}^{27}+84.5\pm 1.3^{\circ}$ ($c=1.000$, DMSO)

Elemental Analysis ($\text{C}_{24}\text{H}_{29}\text{N}_3\text{O}_4\text{S}$)

5 Calcd.(%): C, 64.22; H, 6.25; N, 8.99; S, 6.86

Found(%): C, 64.13; H, 6.10; N, 8.92; S, 7.08

Compound I-24

300MHz ^1H -NMR(CDCl_3) δ : 1.14(1H, m), 1.22-1.35(2H, m), 1.44-1.53(2H, m),
1.58-1.78(4H, m), 2.02-2.28(5H, m), 2.36(2H, t, $J=7.2\text{Hz}$), 2.58(1H, m), 3.87(1H,
10 m), 5.15-5.48(2H, m), 6.29 and 7.18(each 2H, each t, $J=2.4\text{Hz}$), 6.38(1H, d,
 $J=7.2\text{Hz}$), 7.77(1H, dd, $J=1.8$ and 8.7Hz), 7.82(1H, s), 7.91(1H, d, $J=8.7\text{Hz}$),
8.34(1H, d, $J=1.8\text{Hz}$).

IR(CHCl_3): 3512, 3441, 3423, 3144, 2670, 1708, 1530, 1501, 1374, 1164 cm^{-1} .

$[\alpha]_{\text{D}}^{26}+96.1\pm 1.4^{\circ}$ ($c=1.006$, MeOH)

15 Elemental Analysis ($\text{C}_{27}\text{H}_{36}\text{N}_2\text{O}_5\text{S}_2\cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 61.16; H, 5.78; N, 5.28; S, 12.09

Found(%): C, 61.17; H, 5.74; N, 5.35; S, 12.12

Compound I-25

300MHz ^1H -NMR(CDCl_3) δ : 1.06(1H, m), 1.17-1.31(2H, m), 1.39-1.48(2H, m),
20 1.56-1.77(4H, m), 1.99-2.20(5H, m), 2.34(2H, t, $J=7.2\text{Hz}$), 2.53(1H, m), 3.84(1H,
m), 5.29-5.42(2H, m), 6.20(1H, d, $J=7.2\text{Hz}$), 7.10-7.17(3H, m), 7.32(1H, dd,
 $J=1.2$ and 3.6Hz), 7.54(1H, dd, $J=1.2$ and 5.4Hz), 7.60-7.64(2H, m).

IR(CHCl_3): 3518, 3447, 2669, 1708, 1651, 1596, 1515, 1483 cm^{-1} .

$[\alpha]_{\text{D}}^{26}+84.7\pm 1.2^{\circ}$ ($c=1.003$, MeOH)

25 Elemental Analysis ($\text{C}_{26}\text{H}_{29}\text{NO}_3\text{S}_2\cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 65.64; H, 6.43; N, 3.06; S, 14.02

Found(%): C, 65.58; H, 6.41; N, 3.10; S, 13.82

Compound I-26

300MHz ^1H -NMR(CDCl_3) δ : 1.13(1H, m), 1.20-1.33(2H, m), 1.41-1.50(2H, m),
1.56-1.77(4H, m), 2.00-2.21(5H, m), 2.37(2H, t, $J=7.2\text{Hz}$), 2.55(1H, m), 3.87(1H,
m), 5.31-5.45(2H, m), 6.48(1H, d, $J=7.2\text{Hz}$), 7.10(1H, dd, $J=3.9$ and 5.1Hz),
5 7.68(1H, dd, $J=1.2$ and 5.1Hz), 7.69(1H, dd, $J=1.2$ and 3.9Hz), 7.84-7.88 and
7.95-7.99(each 2H, each m).

IR(CHCl_3): 3518, 3441, 3382, 1708, 1659, 1515, 1329, 1158 cm^{-1} .

$[\alpha]_{\text{D}}^{26}+75.7\pm 1.2^\circ$ ($c=1.000$, MeOH)

Elemental Analysis ($\text{C}_{25}\text{H}_{29}\text{NO}_5\text{S}_2$)

10 Calcd.(%): C, 61.58; H, 5.99; N, 2.87; S, 13.15

Found(%): C, 61.36; H, 6.05; N, 2.91; S, 13.13

Compound I-27

mp.213-215°C

300MHz ^1H -NMR(d_6 -DMSO) δ : 1.18-1.61(9H, m), 1.95-2.10(5H, m), 2.21(2H, t,
15 $J=7.5\text{Hz}$), 2.40(1H, m), 3.71(1H, m), 5.33-5.38(2H, m), 7.19(1H, m), 7.87(1H, m),
7.96 and 8.10(each 2H, each d, each $J=8.2\text{Hz}$), 8.21(1H, d, $J=8.6\text{Hz}$), 8.40(1H,
m), 10.92(1H, s), 12.05(1H, brs).

IR(Nujol): 3337, 3249, 3205, 3132, 2524, 1678, 1632, 1545, 1433, 1305 cm^{-1} .

$[\alpha]_{\text{D}}^{23}+85.2\pm 2.5^\circ$ ($c=0.505$, MeOH)

20 Elemental Analysis ($\text{C}_{27}\text{H}_{31}\text{N}_3\text{O}_4\cdot 0.3\text{H}_2\text{O}$)

Calcd.(%): C, 69.72; H, 6.80; N, 9.03

Found(%): C, 69.76; H, 6.75; N, 8.76

Compound I-28

300MHz ^1H -NMR(CDCl_3) δ : 1.07(1H, m), 1.18-1.32(2H, m), 1.40-1.50(2H, m),
25 1.56-1.78(4H, m), 2.00-2.21(5H, m), 2.34(2H, t, $J=7.2\text{Hz}$), 2.54(1H, m), 3.85(1H,
m), 5.29-5.42(2H, m), 6.17(1H, d, $J=6.9\text{Hz}$), 7.07(1H, dd, $J=1.2$ and 5.1Hz),
7.15(2H, d $J=8.7\text{Hz}$), 7.43(1H, dd, $J=3.0$ and 5.1Hz), 7.51(1H, dd, $J=1.2$ and

3.0Hz), 7.62(2H, d, J=8.7Hz).

IR(CHCl₃): 3510, 3447, 3110, 2666, 1708, 1651, 1596, 1515, 1482 cm⁻¹.

[α]_D²⁷+85.9±1.3° (c=1.007, MeOH)

Elemental Analysis (C₂₅H₂₉NO₅S₂)

5 Calcd.(%): C, 65.90; H, 6.42; N, 3.07; S, 14.07

Found(%): C, 65.60; H, 6.36; N, 3.36; S, 13.86

Compound I-29

mp.123-125°C

300MHz ¹H-NMR(CDCl₃) δ : 1.12(1H, m), 1.18-1.34(2H, m), 1.42-1.50(2H, m),

10 1.56-1.78(4H, m), 2.02-2.21(5H, m), 2.35(2H, t, J=7.2Hz), 2.55(1H, m), 3.88(1H, m), 5.31-5.45(2H, m), 6.42(1H, d, J=6.0Hz), 7.31(1H, d, J=5.1Hz), 7.40(1H, dd, J=3.0 and 5.1Hz), 7.87 and 7.96(each 2H, each d, each J=8.7Hz), 8.11(1H, d, J=3.0Hz).

IR(Nujol): 3286, 3108, 2671, 1701, 1641, 1546, 1327, 1156 cm⁻¹.

15 [α]_D²⁷+75.3±1.2° (c=1.004, MeOH)

Elemental Analysis (C₂₅H₂₉NO₅S₂)

Calcd.(%): C, 61.58; H, 5.99; N, 2.87; S, 13.15

Found(%): C, 61.39; H, 5.94; N, 3.02; S, 12.99

Compound I-30

20 300MHz ¹H-NMR(CDCl₃) δ : 1.12(1H, m), 1.23-1.34(2H, m), 1.43-1.52(2H, m), 1.58-1.79(4H, m), 2.02-2.24(5H, m), 2.36(2H, t, J=7.2Hz), 2.53(1H, m), 3.87(1H, m), 5.32-5.45(2H, m), 6.11(1H, d, J=3.6Hz), 6.28(1H, d, J=7.5Hz), 6.35 and 7.09(each 2H, each t, each J=2.1Hz), 7.16(1H, d, J=3.6Hz).

IR(CHCl₃): 3512, 3438, 3142, 1741, 1709, 1653, 1623, 1564, 1508 cm⁻¹.

25 [α]_D²⁶+102.4±1.4° (c=1.006, MeOH)

Elemental Analysis (C₂₃H₂₈N₂O₄·0.2H₂O)

Calcd.(%): C, 69.05; H, 7.15; N, 7.00

Found(%): C, 69.12; H, 7.10; N, 6.95

Compound I-31

300MHz ^1H -NMR(CDCl_3) δ : 1.04(1H, m), 1.08-1.28(2H, m), 1.41-1.46(2H, m),
1.55-1.78(4H, m), 1.99-2.16(5H, m), 2.34(2H, t, $J=7.2\text{Hz}$), 2.51(1H, m), 3.81(1H,
5 m), 4.13(2H, s), 5.29-5.42(2H, m), 5.96(1H, d, $J=8.1\text{Hz}$), 6.77(1H, ddd, $J=0.9$,
0.9 and 3.9Hz), 7.20-7.35(5H, m), 7.37(1H, d, $J=3.9\text{Hz}$).

IR(CHCl_3): 3511, 3445, 2670, 1708, 1642, 1544, 1507, 1455 cm^{-1} .

$[\alpha]_{\text{D}}^{26}+67.1\pm 1.1^\circ$ ($c=1.015$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{31}\text{NO}_3\text{S}$)

10 Calcd.(%): C, 71.36; H, 7.14; N, 3.20; S, 7.33

Found(%): C, 71.19; H, 7.16; N, 3.34; S, 7.26

Compound I-32

300MHz ^1H -NMR(CDCl_3) δ : 1.22-1.85(9H, m), 1.95-2.53(7H, m), 2.66(1H, m),
3.84(1H, m), 5.37-5.60(2H, m), 6.79(1H, d, $J=6.0\text{Hz}$), 7.01-7.17(5H, m), 7.83(1H,
15 dd, $J=1.5$ and 8.7Hz), 7.53(1H, d, $J=8.7\text{Hz}$), 7.89(1H, s), 8.35(1H, s), 8.83(1H, d,
 $J=1.5\text{Hz}$).

IR(CHCl_3): 3509, 3437, 3364, 3209, 1710, 1634, 1495, 1344, 1158 cm^{-1} .

$[\alpha]_{\text{D}}^{26}+36.6\pm 0.8^\circ$ ($c=1.005$, MeOH)

Elemental Analysis ($\text{C}_{29}\text{H}_{32}\text{N}_2\text{O}_6\text{S}_2\cdot 0.2\text{H}_2\text{O}$)

20 Calcd.(%): C, 62.61; H, 5.87; N, 5.04; S, 11.53

Found(%): C, 62.53; H, 5.87; N, 5.21; S, 11.42

Compound I-33

300MHz ^1H -NMR(CDCl_3) δ : 1.13(1H, m), 1.20-1.37(2H, m), 1.46-1.56(2H, m),
1.60-1.80(4H, m), 2.02-2.28(5H, m), 2.38(2H, t, $J=7.2\text{Hz}$), 2.64(1H, m), 3.94(1H,
25 m), 5.35-5.50(2H, m), 6.21(1H, d, $J=7.2\text{Hz}$), 6.28 and 7.21(each 2H, each t, each
 $J=2.4\text{Hz}$), 7.81(1H, dd, $J=1.8$ and 8.7Hz), 7.91(1H, d, $J=8.7\text{Hz}$), 7.99(1H, s),
8.97(1H, d, $J=1.8\text{Hz}$).

IR(CHCl₃): 3513, 3438, 3144, 3096, 1708, 1656, 1518, 1374 cm⁻¹.

[α]_D²⁶+40.1±0.8° (c=1.010, MeOH)

Elemental Analysis (C₂₇H₃₀N₂O₅S₂·0.2H₂O)

Calcd.(%): C, 61.16; H, 5.78; N, 5.28; S, 12.09

5 Found(%): C, 61.16; H, 5.76; N, 5.43; S, 12.05

Compound I-34

300MHz ¹H-NMR(CDCl₃) δ : 1.18-1.35(3H, m), 1.40-1.48(2H, m), 1.57-1.79(4H, m), 1.99-2.21(5H, m), 2.37(2H, t, J=7.2Hz), 2.50(1H, m), 3.80(1H, m), 5.32-5.47(2H, m), 6.38(2H, t, J=2.4Hz), 6.54(1H, d, J=7.5Hz), 7.12 and 7.13(each 1H, each d, each J=3.6Hz), 7.20(2H, t, J=2.4Hz).

IR(CHCl₃): 3512, 3433, 3144, 2686, 1708, 1669, 1591, 1528, 1475, 1457, 1394 cm⁻¹.

[α]_D²⁶+74.3±1.1° (c=1.007, MeOH)

Elemental Analysis (C₂₃H₂₈N₂O₅S)

15 Calcd.(%): C, 59.98; H, 6.13; N, 6.08; S, 6.96

Found(%): C, 59.71; H, 6.22; N, 6.10; S, 7.02

Compound I-35

mp.102-103°C

300MHz ¹H-NMR(CDCl₃) δ : 1.05(1H, m), 1.18-1.30(2H, m), 1.38-1.48(2H, m), 1.55-1.78(4H, m), 1.99-2.19(5H, m), 2.35(2H, t, J=7.2Hz), 2.52(1H, m), 3.81(1H, m), 5.20(2H, d, J=0.9Hz), 5.30-5.42(2H, m), 5.99(1H, d, J=7.2Hz), 6.20 and 6.71 (each 2H, each t, each J=2.1Hz), 6.86(1H, td, J=0.9 and 3.9Hz), 7.37(1H, d, J=3.9Hz).

IR(Nujol): 3393, 3093, 6064, 2669, 1704, 1616, 1523, 1522 cm⁻¹.

25 [α]_D²⁶+71.1±1.1° (c=1.005, MeOH)

Elemental Analysis (C₂₄H₃₀N₂O₃S)

Calcd.(%): C, 67.58; H, 7.09; N, 6.57; S, 7.52

Found(%): C, 67.45; H, 7.09; N, 6.58; S, 7.67

Compound I-36

300MHz ^1H -NMR(CDCl_3) δ : 1.07(1H, m), 1.18-1.31(2H, m), 1.40-1.48(2H, m),
1.56-1.78(4H, m), 2.00-2.20(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.53(1H, m), 3.82(1H,
5 m), 5.31-5.43(2H, m), 6.02(1H, d, $J=7.2\text{Hz}$), 7.15 and 7.44 (each 1H, each d,
each $J=3.9\text{Hz}$), 7.20-7.33(5H, m).

IR(CHCl_3): 3511, 3444, 3426, 3031, 2665, 1708, 1646, 1530, 1499, 1477, 1421,
1318 cm^{-1} .

$[\alpha]_{\text{D}^{26}}+74.8\pm 1.1^\circ$ ($c=1.004$, MeOH)

10 Elemental Analysis ($\text{C}_{25}\text{H}_{29}\text{NO}_5\text{S}_2$)

Calcd.(%): C, 65.90; H, 6.42; N, 3.07; S, 14.07

Found(%): C, 65.61; H, 6.40; N, 3.19; S, 14.18

Compound I-37

300MHz ^1H -NMR(CDCl_3) δ : 1.09(1H, m), 1.17-1.31(2H, m), 1.38-1.47(2H, m),
15 1.54-1.74(4H, m), 2.00-2.17(5H, m), 2.34(2H, t, $J=7.2\text{Hz}$), 2.52(1H, m), 3.80(1H,
m), 5.30-5.43(2H, m), 6.27(1H, d, $J=7.2\text{Hz}$), 7.41(1H, d, $J=4.2\text{Hz}$), 7.51-7.64(4H,
m), 7.98(2H, m).

IR(CHCl_3): 3515, 3442, 3366, 1708, 1656, 1530, 1504, 1327, 1156 cm^{-1} .

$[\alpha]_{\text{D}^{26}}+73.1\pm 1.1^\circ$ ($c=1.004$, MeOH)

20 Elemental Analysis ($\text{C}_{25}\text{H}_{29}\text{NO}_5\text{S}_2\cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 61.13; H, 6.03; N, 2.85; S, 13.05

Found(%): C, 60.94; H, 6.02; N, 2.86; S, 13.12

Compound I-38

mp.163-165°C

25 300MHz ^1H -NMR(CDCl_3) δ : 1.24-1.43(3H, m), 1.52-1.87(8H, m), 2.10(1H, d,
 $J=3.0\text{Hz}$), 2.30-2.55(4H, m), 2.71(1H, m), 3.66(1H, m), 5.38 and 5.63(each 1H,
each m), 7.13(1H, d, $J=1.5\text{Hz}$), 7.34(1H, d, $J=5.4\text{Hz}$), 7.49-7.60(3H, m), 7.86-

7.89(2H, m), 8.49(1H, s), 8.69(1H, d, $J=1.5\text{Hz}$).

IR(KBr): 3367, 3261, 3090, 1726, 1645, 1618, 1589, 1577, 1535, 1513, 1426, 1396, 1289, 1197 cm^{-1} .

$[\alpha]_{\text{D}^{23}}+84.5\pm 1.2^\circ$ ($c=1.006$, MeOH)

5 Elemental Analysis ($\text{C}_{26}\text{H}_{30}\text{N}_2\text{O}_4\text{S}$)

Calcd.(%): C, 66.93; H, 6.48; N, 6.00; S, 6.87

Found(%): C, 66.97; H, 6.36; N, 6.01; S, 6.89

Compound I-39

300MHz ^1H -NMR(CDCl_3) δ : 1.25-1.80(9H, m), 1.87-2.05(3H, m), 2.14-2.29(2H, m), 2.37(2H, t, $J=6.9\text{Hz}$), 2.57(1H, m), 3.73(1H, m), 5.35 and 5.49(each 1H, each m), 6.71(1H, d, $J=6.6\text{Hz}$), 6.87(1H, d, $J=1.5\text{Hz}$), 7.43-7.48(2H, m), 7.56(1H, m), 7.63(1H s), 7.64((1H, j, $J=1.5\text{Hz}$), 7.73-7.76(2H, m).

IR(CHCl_3): 3510, 3379, 3247, 3108, 1709, 1637, 1556, 1516, 1448, 1365, 1319, 1161 cm^{-1} .

15 $[\alpha]_{\text{D}^{23}}+61.1\pm 1.0^\circ$ ($c=1.004$, MeOH)

Elemental Analysis ($\text{C}_{25}\text{H}_{30}\text{N}_2\text{O}_5\text{S}_2\cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 59.31; H, 6.05; N, 5.53; S, 12.67

Found(%): C, 59.38; H, 6.11; N, 5.75; S, 12.41

Compound I-40

20 300MHz ^1H -NMR(CDCl_3) δ : 1.11(1H, m), 1.24-1.31(2H, m), 1.44-1.52(2H, m), 1.60-1.79(4H, m), 2.00-2.21(5H, m), 2.37(2H, t, $J=7.2\text{Hz}$), 2.56(1H, m), 3.86(1H, m), 5.32-5.46(2H, m), 6.11(1H, d, $J=7.8\text{Hz}$), 7.25 and 7.49(each 1H, each d, each $J=4.2\text{Hz}$), 7.30-7.43(3H, m), 7.60-7.63(2H, m).

IR(CHCl_3): 3510, 3445, 3428, 1739, 1708, 1643, 1540, 1510, 1491, 1454 cm^{-1} .

25 $[\alpha]_{\text{D}^{25}}+88.0\pm 1.3^\circ$ ($c=1.012$, MeOH)

Elemental Analysis ($\text{C}_{25}\text{H}_{29}\text{NO}_3\text{S}\cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 70.29; H, 6.94; N, 3.28; S, 7.51

Found(%): C, 70.35; H, 7.01; N, 3.59; S, 7.46

Compound I-41

300MHz ^1H -NMR(CDCl_3) δ : 1.13(1H, m), 1.22-1.32(2H, m), 1.46-1.51(2H, m),
1.60-1.76(4H, m), 2.04-2.17(5H, m), 2.36(2H, t, $J=7.2\text{Hz}$), 2.57(1H, m), 3.86(1H,
5 m), 5.32-5.46(2H, m), 6.30(1H, d, $J=8.4\text{Hz}$), 7.48-7.65(5H, m), 7.84-7.88(2H, m).
IR(CHCl_3): 3511, 3443, 3425, 1708, 1643, 1529, 1506, 1448 cm^{-1} .

$[\alpha]_{\text{D}}^{25}+92.4\pm 1.3^\circ$ ($c=1.000$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{29}\text{NO}_4\text{S}_2\cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 68.61; H, 6.51; N, 3.08; S, 7.04

10 Found(%): C, 68.55; H, 6.52; N, 3.13; S, 7.03

Compound I-42

300MHz ^1H -NMR(CDCl_3) δ : 1.10(1H, m), 1.27-1.31(2H, m), 1.49(2H, brs),
1.59-1.80(4H, m), 2.00-2.20(5H, m), 2.36(2H, t, $J=7.2\text{Hz}$), 2.55(1H, m), 3.85(1H,
m), 5.31-5.45(2H, m), 6.14(1H, d, $J=7.2\text{Hz}$), 7.13(1H, d, $J=3.9\text{Hz}$), 7.30(1H, dd,
15 $J=1.2$ and 5.1Hz), 7.36(1H, dd, $J=3.0$ and 5.1Hz), 7.45-7.46(2H, m).

IR(CHCl_3): 3511, 3445, 3428, 3109, 1708, 1642, 1523, 1499, 1456 cm^{-1} .

$[\alpha]_{\text{D}}^{25}+82.9\pm 1.2^\circ$ ($c=1.006$, MeOH)

Elemental Analysis ($\text{C}_{23}\text{H}_{27}\text{NO}_3\text{S}_2\cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 64.04; H, 6.36; N, 3.25; S, 14.86

20 Found(%): C, 63.99; H, 6.52; N, 3.23; S, 14.85

Compound I-43

300MHz ^1H -NMR(CDCl_3) δ : 1.10(1H, m), 1.22-1.31(2H, m), 1.46-1.51(2H, m),
1.60-1.80(4H, m), 2.03-2.22(5H, m), 2.37(2H, t, $J=7.2\text{Hz}$), 2.55(1H, m), 3.85(1H,
m), 5.32-5.45(2H, m), 6.07(1H, d, $J=7.5\text{Hz}$), 7.04(1H, dd, $J=3.6$ and 5.4Hz),
25 7.11(1H, d, $J=3.9\text{Hz}$), 7.24(1H, dd, $J=1.2$ and 3.6Hz), 7.28(1H, dd, $J=1.2$ and
5.4Hz), 7.42(1H, d $J=3.9\text{Hz}$).

IR(CHCl_3): 3511, 3445, 3428, 3113, 3073, 2667, 1708, 1643, 1521, 1498, 1455

cm⁻¹.

$[\alpha]_{\text{D}}^{25} + 89.5 \pm 1.3^\circ$ (c=1.005, MeOH)

Elemental Analysis (C₂₃H₂₇NO₃S₂·0.1H₂O)

Calcd.(%): C, 64.04; H, 6.36; N, 3.25; S, 14.86

5 Found(%): C, 63.93; H, 6.39; N, 3.46; S, 14.61

Compound I-44

mp.146-147°C

300MHz ¹H-NMR(CDCl₃) δ: 1.10(1H, m), 1.24-1.31(2H, m), 1.46-1.51(2H, m),
1.61-1.82(4H, m), 2.00-2.24(5H, m), 2.37(2H, t, J=7.2Hz), 2.37(3H, s), 2.56(1H,
10 m), 3.85(1H, m), 5.31-5.45(2H, m), 6.06(1H, d, J=6.9Hz), 7.20 and 7.51(each 2H,
each d, each J=9.0Hz), 7.21 and 7.48(each 1H, each d, each J=3.9Hz).

IR(CHCl₃): 3517, 3445, 3428, 1740, 1708, 1642, 1542, 1518, 1498, 1451 cm⁻¹.

$[\alpha]_{\text{D}}^{26} + 89.3 \pm 1.3^\circ$ (c=1.009, MeOH)

Elemental Analysis (C₂₆H₃₁NO₃S)

15 Calcd.(%): C, 71.36; H, 7.14; N, 3.20; S, 7.33

Found(%): C, 71.51; H, 7.10; N, 3.20; S, 7.33

Compound I-45

mp.110-116°C

300MHz ¹H-NMR(CDCl₃) δ: 1.10(1H, m), 1.24-1.31(2H, m), 1.46-1.51(2H, m),
20 1.61-1.83(4H, m), 2.00-2.25(5H, m), 2.37(2H, t, J=7.2Hz), 2.56(1H, m), 3.84(3H,
s), 3.85(1H, m), 5.31-5.45(2H, m), 6.04(1H, d, J=7.5Hz), 6.93 and 7.55(each 2H,
each d, each J=8.7Hz), 7.15 and 7.46(each 2H, each d, each J=4.2Hz).

IR(CHCl₃): 3515, 3445, 3428, 1740, 1708, 1640, 1608, 1541, 1499, 1453, 1178
cm⁻¹.

25 $[\alpha]_{\text{D}}^{26} + 88.0 \pm 1.3^\circ$ (c=1.010, MeOH)

Elemental Analysis (C₂₆H₃₁NO₄S)

Calcd.(%): C, 68.85; H, 6.89; N, 3.09; S, 7.07

Found(%): C, 68.87; H, 6.82; N, 3.11; S, 7.19

Compound I-46

mp.124-125°C

300MHz ¹H-NMR(CDCl₃) δ: 1.10(1H, m), 1.24-1.32(2H, m), 1.46-1.51(2H, m),
5 1.61-1.82(4H, m), 2.00-2.24(5H, m), 2.37(2H, t, J=7.2Hz), 2.56(1H, m), 3.85(1H,
m), 5.32-5.45(2H, m), 6.06(1H, d, J=7.2Hz), 7.10(2H, t, J=8.7Hz), 6.19 and
7.47(each 1H, each d, each J=3.6Hz), 7.56-5.60(2H, m).

IR(CHCl₃): 3516, 3445, 3428, 2672, 1740, 1708, 1643, 1542, 1519, 1498, 1452
cm⁻¹.

10 [α]_D²⁶+83.3±1.2° (c=1.005, MeOH)

Elemental Analysis (C₂₅H₂₈FNO₃S)

Calcd.(%): C, 68.00; H, 6.39; N, 3.17; F, 4.30; S, 7.26

Found(%): C, 67.90; H, 6.34; N, 3.25; F, 4.31; S, 7.20

Compound I-47

15 300MHz ¹H-NMR(CDCl₃) δ: 1.10(1H, m), 1.18-1.32(2H, m), 1.38-1.48(2H, m),
1.56-1.76(4H, m), 2.00-2.18(5H, m), 2.35(2H, t, J=7.2Hz), 2.53(1H, m), 3.81(1H,
m), 5.31-5.43(2H, m), 6.32(1H, d, J=7.5Hz), 7.11(1H, dd, J=3.9 and 5.1Hz), 7.42
and 7.62(each 1H, each d, each J=3.9Hz), 7.70(1H, dd, J=1.5 and 5.1Hz),
7.74(1H, dd, J=1.5 and 3.9Hz).

20 IR(CHCl₃): 3516, 3442, 3378, 1708, 1655, 1530, 1504, 1336, 1153 cm⁻¹.

[α]_D²⁵+74.3±1.1° (c=1.000, MeOH)

Elemental Analysis (C₂₈H₂₇NO₅S₃·0.1H₂O)

Calcd.(%): C, 55.76; H, 5.53; N, 2.83; S, 19.41

Found(%): C, 55.49; H, 5.64; N, 3.09; S, 19.32

25 Compound I-48

mp.112-115°C

300MHz ¹H-NMR(CDCl₃) δ: 1.13-1.30(3H, m), 1.34-1.45(2H, m), 1.50-1.82(4H,

m), 1.94-2.27(5H, m), 2.34(2H, t, J=7.2Hz), 2.56(1H, m), 3.74(1H, m), 5.22(2H, s), 5.31-5.50(2H, m), 6.64(1H, d, J=6.6Hz), 6.84(1H, d, J=3.9Hz), 6.93 and 7.05(each 1H, each s), 7.47(1H, d, J=3.9Hz), 7.66(1H, s).

IR(Nujol): 3339, 3102, 2464, 1691, 1635, 1622, 1551, 1288 cm^{-1} .

5 $[\alpha]_{\text{D}}^{25} + 71.2 \pm 1.1^\circ$ (c=1.005, MeOH)

Elemental Analysis ($\text{C}_{25}\text{H}_{29}\text{N}_3\text{O}_3\text{S}$)

Calcd.(%): C, 64.61; H, 6.84; N, 9.83; S, 7.50

Found(%): C, 64.54; H, 6.85; N, 9.78; S, 7.42

Compound I-49

10 300MHz ^1H -NMR(CDCl_3) δ : 1.08(1H, m), 1.16-1.30(2H, m), 1.38-1.47(2H, m), 1.54-1.77(4H, m), 1.98-2.20(5H, m), 2.34(2H, t, J=7.2Hz), 2.52(1H, m), 3.79(1H, m), 5.30-5.42(2H, m), 5.47(2H, s), 6.16(1H, d, J=6.9Hz), 6.30(1H, t, J=2.1Hz), 6.94 and 7.41(each 1H, each d, each J=3.6Hz), 7.47 and 7.57(each 1H, each d, each J=2.1Hz).

15 IR(CHCl_3): 3510, 3444, 3426, 1709, 1646, 1546, 1512 cm^{-1} .

$[\alpha]_{\text{D}}^{25} + 68.6 \pm 1.1^\circ$ (c=1.011, MeOH)

Elemental Analysis ($\text{C}_{25}\text{H}_{29}\text{N}_3\text{O}_3\text{S} \cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 64.34; H, 6.85; N, 9.79; S, 7.47

Found(%): C, 64.10; H, 6.93; N, 9.90; S, 7.52

20 Compound I-50

mp.126-128°C

300MHz ^1H -NMR(CDCl_3) δ : 1.12(1H, m), 1.18-1.33(2H, m), 1.40-1.50(2H, m), 1.55-1.78(4H, m), 2.00-2.21(5H, m), 2.54(1H, m), 3.87(1H, m), 5.30-5.44(2H, m), 6.43(1H, d, J=6.6Hz), 7.48-7.62(3H, m), 7.83-7.95(5H, m).

25 IR(Nujol): 3284, 3058, 2669, 1701, 1641, 1546, 1326, 1294, 1160 cm^{-1} .

$[\alpha]_{\text{D}}^{25} + 77.2 \pm 1.2^\circ$ (c=1.007, MeOH)

Elemental Analysis ($\text{C}_{27}\text{H}_{31}\text{NO}_5\text{S}$)

Calcd.(%): C, 67.34; H, 6.49; N, 2.91; S, 6.66

Found(%): C, 67.20; H, 6.38; N, 2.88; S, 6.58

Compound I-51

mp.103-107°C

300MHz ¹H-NMR(CDCl₃) δ: 1.14(1H, m), 1.18-1.33(2H, m), 1.40-1.50(2H, m), 1.54-1.77(4H, m), 2.00-2.20(5H, m), 2.34(2H, t, J=7.2Hz), 2.54(1H, m), 3.85(3H, s), 3.86(1H, m), 5.30-5.45(2H, m), 6.48(1H, d, J=6.9Hz), 6.96(2H, m), 7.81-7.91(6H, m).

IR(Nujol): 3273, 3067, 2669, 1702, 1639, 1560, 1548, 1323, 1301, 1274, 1156

10 cm⁻¹.

[α]_D²⁵+75.4±1.2° (c=1.002, MeOH)

Elemental Analysis (C₂₈H₃₃NO₆S)

Calcd.(%): C, 65.73; H, 6.50; N, 2.74; S, 6.27

Found(%): C, 65.50; H, 6.46; N, 2.82; S, 6.25

15 Compound I-52

300MHz ¹H-NMR(CDCl₃) δ: 1.17(1H, m), 1.26-1.34(2H, m), 1.47-1.53(2H, m), 1.60-1.76(4H, m), 2.04-2.21(5H, m), 2.36(2H, t, J=7.2Hz), 2.60(1H, m), 3.91(1H, m), 5.32-5.47(2H, m), 6.46(1H, d, J=8.4Hz), 7.17(1H, dd, J=3.9 and 5.1Hz), 7.61(1H, dd, J=1.2 and 3.9Hz), 7.76(1H, dd, J=1.2 and 5.1Hz), 7.87(4H, s-like).

20 IR(CHCl₃): 3518, 3444, 2663, 1708, 1638, 1517, 1494, 1414 cm⁻¹.

[α]_D²⁵+86.6±1.3° (c=1.008, MeOH)

Elemental Analysis (C₂₆H₂₉NO₄S)

Calcd.(%): C, 69.15; H, 6.47; N, 3.10; S, 7.10

Found(%): C, 68.86; H, 6.70; N, 3.15; S, 6.95

25 Compound I-53

mp.144-145°C

300MHz ¹H-NMR(CDCl₃) δ: 1.20-2.54(16H, m), 2.62(1H, m), 3.69(3H, s), 5.35-

5.56(2H, m), 6.36 and 7.17(each 2H, each t, each J=2.4Hz), 6.66(1H, d, J=6.3Hz), 8.05 and 8.07(each 1H, each d, each J=1.5Hz).

IR(Nujol): 3509, 3406, 3146, 3110, 1728, 1708, 1653, 1535, 1375, 1189, 1166 cm^{-1} .

5 $[\alpha]_{\text{D}}^{25} + 67.9 \pm 1.1^\circ$ (c=1.007, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{28}\text{N}_2\text{O}_5\text{S}_2$)

Calcd.(%): C, 57.96; H, 5.92; N, 5.88; S, 13.45

Found(%): C, 58.19; H, 5.95; N, 5.75; S, 13.09

Compound I-54

10 300MHz ^1H -NMR(CDCl_3) δ : 1.22-2.57(16H, m), 2.68(1H, m), 3.66(3H, s), 5.37-5.63(2H, m), 6.20, 6.35, 6.74 and 6.87(each 2H, each t, each J=2.4Hz), 6.92(1H, d, J=5.4Hz), 8.27(1H, s).

IR(CHCl_3): 3402, 3143, 3108, 1725, 1710, 1650, 1516, 1375 cm^{-1} .

$[\alpha]_{\text{D}}^{26} + 70.0 \pm 1.1^\circ$ (c=1.006, MeOH)

15 Elemental Analysis ($\text{C}_{27}\text{H}_{31}\text{N}_3\text{O}_5\text{S}_2 \cdot 0.3\text{H}_2\text{O}$)

Calcd.(%): C, 59.28; H, 5.82; N, 7.68; S, 11.72

Found(%): C, 59.28; H, 5.77; N, 5.58; S, 11.68

Compound I-55

300MHz ^1H -NMR(CDCl_3) δ : 1.10(1H, m), 1.18-1.31(2H, m), 1.40-1.45(2H, m),
20 1.57-1.74(4H, m), 2.00-2.10(5H, m), 2.35(2H, t, J=7.2Hz), 2.38(3H, s), 2.52(1H, m), 3.80(1H, m), 5.31-5.43(2H, m), 5.99(1H, m), 6.20(1H, t, J=3.3Hz), 6.30(1H, d, J=6.9Hz), 7.18(1H, dd, J=1.8 and 3.3Hz), 7.40 and 7.53(each 1H, each d, each J=3.9Hz).

IR(CHCl_3): 3513, 3442, 3149, 3100, 1708, 1657, 1530, 1504, 1375, 1183, 1161

25 cm^{-1} .

$[\alpha]_{\text{D}}^{27} + 70.3 \pm 1.5^\circ$ (c=0.730, MeOH)

Elemental Analysis ($\text{C}_{24}\text{H}_{30}\text{N}_2\text{O}_5\text{S}_2 \cdot 0.4\text{H}_2\text{O}$)

Calcd.(%): C, 57.90; H, 6.24; N, 5.63; S, 12.88

Found(%): C, 58.08; H, 6.28; N, 5.77; S, 12.54

Compound I-56

300MHz ^1H -NMR(d_6 -DMSO) δ : 1.06-1.59(9H, m), 1.93-2.07(5H, m), 2.21(2H, t,

5 J=7.2Hz), 2.35(1H, m), 3.65(1H, m), 5.30-5.41(2H, m), 6.90 and 7.69(each 1H, each d, each J=4.2Hz), 7.55-7.64(3H, m), 7.99-8.04(3H, m), 11.73(1H, s), 12.01(1H, brs).

IR(KBr): 3562, 1708, 1616, 1564, 1523, 1454, 1295 cm^{-1} .

$[\alpha]_{\text{D}^{27}} + 71.2 \pm 1.1^\circ$ (c=1.000, MeOH)

10 Elemental Analysis ($\text{C}_{26}\text{H}_{30}\text{N}_2\text{O}_4\text{S} \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 66.42; H, 6.52; N, 5.96; S, 6.82

Found(%): C, 66.43; H, 6.32; N, 6.17; S, 6.75

Compound I-57

300MHz ^1H -NMR(d_6 -DMSO) δ : 1.05-1.56(9H, m), 1.91-2.05(5H, m), 2.19(2H, t,

15 J=7.2Hz), 2.29(1H, m), 3.56(1H, m), 5.28-5.38(2H, m), 6.54 and 7.56(each 1H, each d, each J=4.2Hz), 7.59-7.62(3H, m), 7.76-7.79(2H, m), 8.06(1H, d, J=6.9Hz), 11.10(1H, s), 11.99(1H, brs).

IR(KBr): 3384, 3084, 1707, 1616, 1553, 1523, 1459, 1350, 1322, 1161 cm^{-1} .

$[\alpha]_{\text{D}^{27}} + 62.4 \pm 1.0^\circ$ (c=1.005, MeOH)

20 Elemental Analysis ($\text{C}_{25}\text{H}_{30}\text{N}_2\text{O}_6\text{S}_2 \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 59.31; H, 6.05; N, 5.53; S, 12.66

Found(%): C, 59.36; H, 5.75; N, 5.55; S, 12.38

Compound I-58

300MHz ^1H -NMR(CDCl_3) δ : 1.07(1H, m), 1.17-1.33(2H, m), 1.36-1.50(2H, m),

25 1.54-1.75(4H, m), 2.00-2.20(5H, m), 2.35(2H, t, J=7.2Hz), 2.45(3H, s), 2.52(1H, m), 3.80(1H, m), 5.31-5.43(2H, m), 6.12(1H, d, J=7.5Hz), 6.32 and 7.18(each 2H, each t, each J=2.4Hz), 7.22(1H, s).

IR(CHCl₃): 3316, 3442, 3145, 2668, 1708, 1657, 1545, 1509, 1455, 1375, 1190, 1165, 1057 cm⁻¹.

$[\alpha]_D^{26} + 75.8 \pm 1.2^\circ$ (c=1.002, MeOH)

Elemental Analysis (C₂₄H₃₀N₂O₅S₂·0.1H₂O)

5 Calcd.(%): C, 58.54; H, 6.18; N, 5.69; S, 13.02

Found(%): C, 58.35; H, 6.29; N, 5.74; S, 12.92

Compound I-59

300MHz ¹H-NMR(CDCl₃) δ: 1.05(1H, m), 1.16-1.30(2H, m), 1.38-1.48(2H, m), 1.53-1.79(4H, m), 1.98-2.17(5H, m), 2.34(2H, t, J=7.2Hz), 2.50(1H, m), 3.79(1H, 10 m), 5.30-5.42(2H, m), 6.00(1H, d, J=7.5Hz), 7.01(1H, dd, J=3.6 and 5.4Hz), 7.03(1H, d, J=3.9Hz), 7.29(1H, dd, J=1.2 and 3.6Hz), 7.33(1H, d, J=3.9) 7.43(1H, dd, J=1.2 and 5.4Hz).

IR(CHCl₃): 3517, 3444, 3426, 2670, 1708, 1645, 1530, 1499, 1421, 1318 cm⁻¹.

$[\alpha]_D^{26} + 70.8 \pm 1.1^\circ$ (c=1.018, MeOH)

15 Elemental Analysis (C₂₃H₂₇NO₃Se)

Calcd.(%): C, 59.84; H, 5.89; N, 3.03; S, 20.84

Found(%): C, 59.73; H, 5.99; N, 3.15; S, 20.70

Compound I-60

300MHz ¹H-NMR(CDCl₃) δ: 1.07(1H, m), 1.17-1.32(2H, m), 1.40-1.50(2H, m), 20 1.56-1.80(4H, m), 1.99-2.21(5H, m), 2.34(2H, t, J=7.2Hz), 2.54(1H, m), 3.85(1H, m), 5.29-5.42(2H, m), 6.20(1H, d, J=6.9Hz), 7.23-7.45(7H, m), 7.55(2H, d, J=8.1Hz).

IR(CHCl₃): 3516, 3447, 2667, 1708, 1651, 1596, 1514, 1481 cm⁻¹.

$[\alpha]_D^{26} + 89.1 \pm 1.3^\circ$ (c=1.006, MeOH)

25 Elemental Analysis (C₂₇H₃₁NO₃S·0.2H₂O)

Calcd.(%): C, 71.56; H, 6.98; N, 3.09; S, 7.07

Found(%): C, 71.39; H, 6.97; N, 3.16; S, 6.94

Compound I-61

300MHz ¹H-NMR(CDCl₃) δ: 1.06(1H, m), 1.18-1.31(2H, m), 1.41-1.50(2H, m),
1.55-1.80(4H, m), 1.99-2.20(5H, m), 2.35(2H, t, J=7.2Hz), 2.52(1H, m), 3.82(1H,
m), 5.31-5.43(2H, m), 5.97(1H, d, J=6.6Hz), 6.45(1H, d, J=4.2Hz), 7.11-7.20(3H,
5 m), 7.28(1H, d, J=4.2Hz), 7.33-7.40(2H, m).

IR(CHCl₃): 3515, 3445, 3427, 2667, 1740, 1708, 1640, 1506, 1475 cm⁻¹.

[α]_D²⁷+71.3±1.1° (c=1.002, MeOH)

Elemental Analysis (C₂₅H₂₉NO₄S)

Calcd.(%): C, 68.31; H, 6.65; N, 3.19; S, 7.29

10 Found(%): C, 68.41; H, 6.87; N, 3.22; S, 7.35

Compound I-62

300MHz ¹H-NMR(CDCl₃) δ: 1.14(1H, m), 1.20-1.35(2H, m), 1.42-1.54(2H, m),
1.57-1.77(4H, m), 2.00-2.23(5H, m), 2.35(2H, t, J=7.2Hz), 2.58(1H, m), 3.88(1H,
m), 5.32-5.46(2H, m), 6.31 and 7.19(each 2H, each t, each J=2.4Hz), 6.33(1H, d,
15 J=7.5Hz), 7.77(1H, dd, J=1.8 and 8.4Hz), 7.77(1H, s), 7.87(1H, d, J=8.4Hz),
8.38(1H, d, J=1.8Hz).

IR(CHCl₃): 3514, 3442, 3422, 3144, 2670, 1708, 1654, 1525, 1375, 1193, 1171
cm⁻¹.

[α]_D²⁶+89.8±1.3° (c=1.000, MeOH)

20 Elemental Analysis (C₂₇H₃₀N₂O₅S₂)

Calcd.(%): C, 61.58; H, 5.74; N, 5.32; S, 12.17

Found(%): C, 61.42; H, 5.86; N, 5.57; S, 11.98

Compound I-63

mp.180-181°C

25 300MHz ¹H-NMR(CDCl₃) δ: 1.04(1H, m), 1.22-1.30(2H, m), 1.41-1.46(2H, m),
1.59-1.82(4H, m), 1.94-2.16(3H, m), 2.25-2.37(2H, m), 2.42(2H, t, J=6.9Hz),
2.52(1H, m), 2.52(3H, s), 3.79(1H, m), 5.41-5.59(2H, m), 5.73(1H, d, J=6.6Hz),

7.48-7.53(2H, m), 7.60(1H, m), 8.07-8.10(2H, m).

IR(Nujol): 3372, 3173, 3053, 2544, 1690, 1672, 1632, 1559, 1496, 1362, 1317 cm^{-1} .

$[\alpha]_{\text{D}}^{28} + 77.7 \pm 1.2^\circ$ (c=1.007, MeOH)

5 Elemental Analysis ($\text{C}_{26}\text{H}_{31}\text{N}_3\text{O}_4\text{S}$)

Calcd.(%): C, 64.84; H, 6.49; N, 8.72; S, 6.66

Found(%): C, 64.66; H, 6.31; N, 8.73; S, 6.65

Compound I-64

300MHz ^1H -NMR(d_6 -DMSO) δ : 1.07(1H, m), 1.28-1.58(8H, m), 1.91-2.08(5H, m),

10 2.20(2H, t, J=7.2Hz), 2.31(3H, s), 2.32(1H, s), 3.96(1H, m), 5.28-5.40(2H, m),
7.52-7.62(3H, m), 7.80-7.83(2H, m), 7.94(1H, d, J=6.9Hz).

IR(Nujol): 3316, 3161, 3106, 2677, 1709, 1629, 1531, 1284, 1142 cm^{-1} .

$[\alpha]_{\text{D}}^{27} + 76.2 \pm 1.2^\circ$ (c=1.002, MeOH)

Elemental Analysis ($\text{C}_{25}\text{H}_{31}\text{N}_3\text{O}_5\text{S}_2 \cdot 0.1\text{H}_2\text{O}$)

15 Calcd.(%): C, 57.80; H, 6.05; N, 8.09; S, 12.34

Found(%): C, 57.59; H, 6.15; N, 8.10; S, 12.57

Compound I-65

300MHz ^1H -NMR(CDCl_3) δ : 1.28-1.31(2H, m), 1.47(2H, brs), 1.56-1.84(4H, m),

1.94-2.30(5H, m), 2.39(2H, t, J=6.9Hz), 2.62(1H, s), 2.63(3H, s), 3.77(1H, m),
20 5.35-5.67(2H, m), 6.42(1H, d, J=6.3Hz), 7.29-7.43(3H, m), 7.46(1H, s), 7.72(2H,
d, J=7.2Hz).

IR(CHCl_3): 3517, 3421, 3350, 3150, 2538, 1708, 1651, 1590, 1512, 1474, 1442,
1164 cm^{-1} .

$[\alpha]_{\text{D}}^{28} + 100.8 \pm 1.4^\circ$ (c=1.002, MeOH)

25 Elemental Analysis ($\text{C}_{27}\text{H}_{31}\text{N}_3\text{O}_3\text{S} \cdot 0.5\text{H}_2\text{O}$)

Calcd.(%): C, 66.64; H, 6.63; N, 8.63; S, 6.59

Found(%): C, 66.55; H, 6.59; N, 8.68; S, 6.76

Compound I-66

300MHz ^1H -NMR(CDCl_3) δ : 1.08(1H, m), 1.19-1.33(2H, m), 1.42-1.50(2H, m),
1.58-1.79(4H, m), 2.01-2.22(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.55(1H, m), 3.86(1H,
m), 4.37(2H, s), 5.30-5.43(2H, m), 6.19(1H, d, $J=7.5\text{Hz}$), 6.90(1H, dd, $J=3.6$ and
5.1Hz), 6.93(1H, m), 7.17(1H, dd, $J=1.2$ and 5.1Hz), 7.33 and 7.65(each 2H,
each d, $J=8.4\text{Hz}$).

IR(CHCl_3): 3518, 3447, 2665, 1708, 1651, 1596, 1515, 1484 cm^{-1} .

$[\alpha]_{\text{D}}^{26}+82.4\pm 1.4^\circ$ ($c=0.900$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{31}\text{NO}_5\text{S}_2\cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 66.24; H, 6.67; N, 2.97; S, 13.60

Found(%): C, 66.14; H, 6.72; N, 2.96; S, 13.53

Compound I-67

300MHz ^1H -NMR(CDCl_3) δ : 1.16(1H, m), 1.21-1.34(2H, m), 1.43-1.52(2H, m),
1.57-1.76(4H, m), 2.04-2.22(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.56(1H, m), 3.89(1H,
m), 4.53(2H, s), 5.33-5.48(2H, m), 6.58(1H, d, $J=6.9\text{Hz}$), 6.83(1H, dd, $J=1.2$ and
3.9Hz), 6.93(1H, dd, $J=3.9$ and 5.1Hz), 7.28(1H, dd, $J=1.2$ and 5.1Hz), 7.65 and
7.81(each 2H, each d, $J=8.4\text{Hz}$).

IR(CHCl_3): 3518, 3442, 3373, 2666, 1708, 1658, 1516, 1483, 1323, 1153 cm^{-1} .

$[\alpha]_{\text{D}}^{26}+69.6\pm 1.1^\circ$ ($c=1.003$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{31}\text{NO}_5\text{S}_2\cdot 0.5\text{H}_2\text{O}$)

Calcd.(%): C, 61.15; H, 6.32; N, 2.74; S, 12.56

Found(%): C, 66.16; H, 6.25; N, 2.90; S, 12.57

Compound I-68

300MHz ^1H -NMR(CDCl_3) δ : 1.13(1H, m), 1.20-1.32(2H, m), 1.38-1.50(2H, m),
1.54-1.77(4H, m), 1.98-2.20(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.53(1H, m), 3.80(1H,
m), 5.31-5.46(2H, m), 6.47(1H, d, $J=7.5\text{Hz}$), 6.87(1H, dd, $J=1.5$ and 3.6Hz),
6.84(1H, dd, $J=3.6$ and 5.4Hz), 7.03(1H, dd, $J=1.5$ and 5.4Hz), 7.33 and

7.38(each 1H, each d, each J=3.9Hz), 7.90(1H, br).

IR(CHCl₃): 3510, 3440, 3358, 3109, 1708, 1647, 1533, 1505, 1364, 1331, 1161 cm⁻¹.

$[\alpha]_{436}^{29} + 151.3 \pm 1.9^\circ$ (c=1.010, MeOH)

5 Elemental Analysis (C₂₅H₂₈N₂O₅S₃·0.1H₂O)

Calcd.(%): C, 54.12; H, 5.57; N, 5.49; S, 18.84

Found(%): C, 53.84; H, 5.46; N, 5.38; S, 18.62

Compound I-69

300MHz ¹H-NMR(CDCl₃) δ: 1.20(1H, m), 1.26-1.38(2H, m), 1.42-1.52(2H, m),

10 1.57-1.76(4H, m), 2.00-2.24(5H, m), 2.34(2H, t, J=7.2Hz), 2.53(1H, m), 3.88(1H, m), 5.31-5.49(2H, m), 6.63(1H, dd, J=1.2 and 3.9Hz), 6.69(1H, d, J=7.5Hz), 6.77(1H, dd, J=3.9 and 5.4Hz), 6.98(1H, dd, J=1.2 and 5.4Hz), 7.66 and 7.76(each 2H, each d, each J=8.4Hz).

IR(CHCl₃): 3509, 3439, 3363, 3111, 1707, 1651, 1520, 1328, 1167 cm⁻¹.

15 $[\alpha]_{436}^{29} + 155.7 \pm 2.0^\circ$ (c=1.003, MeOH)

Elemental Analysis (C₂₅H₃₀N₂O₅S₃·0.3H₂O)

Calcd.(%): C, 59.10; H, 6.07; N, 5.51; S, 12.62

Found(%): C, 59.00; H, 5.95; N, 5.51; S, 12.46

Compound I-70

20 mp.187-188°C

300MHz ¹H-NMR(d₆-DMSO) δ: 1.16-1.62(9H, m), 1.90-2.14(5H, m), 2.21(2H, t, J=7.2Hz), 2.38(1H, m), 3.66(1H, m), 5.27-5.41(2H, m), 7.10-7.15(1H, m), 7.34-7.39(2H, m), 7.42-7.75(2H, m), 7.91 and 7.99(each 1H, each d, each J=3.9Hz), 8.04(1H, d, J=6.6Hz), 10.32(1H, s), 12.02(1H, s).

25 IR(Nujol): 3316, 3075, 2678, 1704, 1635, 1614, 1544, 1323 cm⁻¹.

$[\alpha]_{\text{D}}^{28} + 83.3 \pm 1.2^\circ$ (c=1.003, MeOH)

Elemental Analysis (C₂₆H₃₀N₂O₄S)

Calcd.(%): C, 66.93; H, 6.48; N, 6.00; S, 6.87

Found(%): C, 67.04; H, 6.45; N, 5.98; S, 6.96

Compound I-71

mp.192-194°C

5 300MHz ¹H-NMR(d₆-DMSO) δ: 1.16-1.62(9H, m), 1.90-2.14(5H, m), 2.21(2H, t, J=7.2Hz), 2.37(1H, m), 3.65(1H, m), 5.29-5.41(2H, m), 7.18-7.24(2H, m), 7.33-7.78(2H, m), 7.91 and 7.97(each 1H, each d, each J=3.9Hz), 8.04(1H, d, J=6.9Hz), 10.38(1H, s), 12.01(1H, s).

IR(Nujol): 3322, 3278, 3150, 3098, 3077, 2678, 1704, 1635, 1615, 1546, 1521,

10 1508, 1322 cm⁻¹.

[α]_D²⁸+83.3±1.2° (c=1.000, MeOH)

Elemental Analysis (C₂₆H₂₉FN₂O₄S)

Calcd.(%): C, 64.44; H, 6.03; N, 5.78; F, 3.92; S, 6.62

Found(%): C, 64.36; H, 6.00; N, 5.81; F, 3.94; S, 6.46

15 Compound I-72

mp.192-193°C

300MHz ¹H-NMR(d₆-DMSO) δ: 1.16-1.62(9H, m), 1.92-2.14(5H, m), 2.21(2H, t, J=7.2Hz), 2.37(1H, m), 3.66(1H, m), 3.75(3H, s), 5.30-5.41(2H, m), 6.94 and 7.63(each 2H, each d-like), 7.89 and 7.94(each 1H, each d, each J=3.9Hz),
20 8.38(1H, d, J=6.9Hz), 10.21(1H, s), 12.01(1H, s).

IR(Nujol): 3316, 3075, 2678, 1704, 1635, 1614, 1544, 1323 cm⁻¹.

[α]_D²⁷+81.6±1.2° (c=1.000, MeOH)

Elemental Analysis (C₂₇H₃₂N₂O₅S)

Calcd.(%): C, 65.30; H, 6.49; N, 5.64; S, 6.46

25 Found(%): C, 65.19; H, 6.49; N, 5.45; S, 6.31

Compound I-73

300MHz ¹H-NMR(CDCl₃) δ: 1.14(1H, m), 1.18-1.32(2H, m), 1.40-1.78(6H, m),

1.94-2.20(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.51(1H, m), 3.80(1H, m), 3.81(6H, s), 3.82(3H, s), 5.30-5.44(2H, m), 6.56(1H, d, $J=7.2\text{Hz}$), 6.97(2H, s), 7.47 and 7.58(each 1H, each d, each $J=3.9\text{Hz}$), 8.43(1H, s).

IR(CHCl_3): 3515, 3438, 3317, 1708, 1650, 1607, 1537, 1508, 1454, 1412, 1131

5 cm^{-1} .

$[\alpha]_{\text{D}}^{27} + 75.8 \pm 1.2^\circ$ ($c=1.009$, MeOH)

Elemental Analysis ($\text{C}_{29}\text{H}_{36}\text{N}_2\text{O}_7\text{S} \cdot 0.4\text{H}_2\text{O}$)

Calcd.(%): C, 61.77; H, 6.58; N, 4.97; S, 5.69

Found(%): C, 61.74; H, 6.64; N, 4.89; S, 5.89

10 Compound I-74

300MHz ^1H -NMR(CDCl_3) δ : 1.10(1H, m), 1.20-1.33(2H, m), 1.43-1.52(2H, m), 1.57-1.78(4H, m), 2.00-2.21(5H, m), 2.36(2H, t, $J=7.2\text{Hz}$), 2.55(1H, m), 3.85(1H, m), 5.32-5.45(2H, m), 6.09(1H, d, $J=6.9\text{Hz}$), 6.32 and 7.00(each 2H, each t, each $J=2.1\text{Hz}$), 6.81 and 7.34(each 1H, each d, each $J=3.9\text{Hz}$).

15 IR(CHCl_3): 3515, 3445, 3109, 2678, 1740, 1708, 1642, 1507, 1489 cm^{-1} .

$[\alpha]_{\text{D}}^{26} + 83.5 \pm 1.2^\circ$ ($c=1.007$, MeOH)

Elemental Analysis ($\text{C}_{23}\text{H}_{28}\text{N}_2\text{O}_3\text{S}$)

Calcd.(%): C, 66.96; H, 6.84; N, 6.79; S, 7.77

Found(%): C, 66.66; H, 6.74; N, 6.74; S, 7.61

20 Compound I-75

300MHz ^1H -NMR(CDCl_3) δ : 1.09(1H, m), 1.20-1.32(2H, m), 1.39-1.49(2H, m), 1.57-1.66(4H, m), 2.01-2.22(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.56(1H, m), 3.88(1H, m), 3.95(2H, s), 5.30-5.44(2H, m), 6.27(1H, d, $J=7.5\text{Hz}$), 6.89-6.91(2H, m), 7.32(1H, dd, $J=2.4$ and 3.9Hz), 7.19 and 7.66(each 2H, each d, $J=8.4\text{Hz}$).

25 IR(CHCl_3): 3516, 3447, 2670, 1708, 1651, 1523, 1496 cm^{-1} .

$[\alpha]_{\text{D}}^{26} + 71.8 \pm 1.1^\circ$ ($c=1.016$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{31}\text{NO}_3\text{S}_2 \cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 66.24; H, 6.67; N, 2.97; S, 13.60

Found(%): C, 66.36; H, 6.67; N, 3.27; S, 13.62

Compound I-76

mp.135-136°C

300MHz ¹H-NMR(CDCl₃) δ: 1.12(1H, m), 1.22-1.33(2H, m), 1.43-1.51(2H, m), 1.59-1.78(4H, m), 2.03-2.22(5H, m), 2.35(2H, t, J=7.2Hz), 2.56(1H, m), 3.87(1H, m), 4.44(2H, s), 5.31-5.45(2H, m), 6.30(1H, d, J=7.2Hz), 7.08(1H, dd, J=3.9 and 5.1Hz), 7.23(2H, d, J=8.4Hz), 7.40(1H, dd, J=1.5 and 3.9Hz), 7.69-7.71(3H, m). IR(CHCl₃): 3516, 3445, 3096, 2665, 1708, 1655, 1523, 1496, 1403, 1327, 1152,

10 1127 m⁻¹.

[α]_D²⁶+65.0±1.1° (c=1.000, MeOH)

Elemental Analysis (C₂₆H₃₁NO₅S₂·0.2H₂O)

Calcd.(%): C, 61.81; H, 6.26; N, 2.77; S, 12.69

Found(%): C, 61.76; H, 6.20; N, 2.90; S, 12.57

15 Compound I-77

mp.215-217°C

300MHz ¹H-NMR(d₆-DMSO) δ: 1.16-1.62(9H, m), 1.90-2.14(5H, m), 2.21(2H, t, J=7.2Hz), 2.38(1H, m), 3.66(1H, m), 5.29-5.41(2H, m), 6.91-6.94(2H, m), 7.05(1H, dd, J=2.4 and 4.2Hz), 7.93 and 7.96(each 1H, each d, each J=4.2Hz), 8.43(1H, d, J=6.6Hz), 10.67(1H, br), 12.01(1H, br).

IR(Nujol): 3315, 3222, 3097, 3049, 2672, 1705, 1621, 1548, 1504, 1311 cm⁻¹.

[α]_D²⁷+88.2±1.3° (c=1.009, MeOH)

Elemental Analysis (C₂₄H₂₈N₂O₄S₂)

Calcd.(%): C, 60.99; H, 5.97; N, 5.93; S, 13.57

25 Found(%): C, 60.94; H, 5.74; N, 5.91; S, 13.61

Compound I-78

300MHz ¹H-NMR(CDCl₃) δ: 1.09(1H, m), 1.18-1.31(2H, m), 1.40-1.47(2H, m),

1.57-1.73(4H, m), 2.00-2.12(5H, m), 2.31(2H, t, $J=7.2\text{Hz}$), 2.56(1H, m), 3.79(1H, m), 4.70(2H, s), 5.30-5.45(2H, m), 6.26-6.30(2H, m), 6.34(1H, d, $J=6.9\text{Hz}$), 7.22(1H, dd, $J=1.8$ and 3.3Hz), 7.41 and 7.62(each 1H, each d, each $J=4.2\text{Hz}$).
IR(CHCl_3): 3589, 3516, 3441, 3355, 3100, 1708, 1656, 1530, 1504, 1377, 1180,

5 1147 cm^{-1} .

$[\alpha]_{\text{D}}^{26.5} + 70.8 \pm 1.1^\circ$ ($c=1.009$, MeOH)

Elemental Analysis ($\text{C}_{24}\text{H}_{30}\text{N}_2\text{O}_5\text{S}_2 \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 56.50; H, 6.01; N, 5.49; S, 12.57

Found(%): C, 56.43; H, 6.02; N, 5.61; S, 12.47

10 Compound I-79

300MHz ^1H -NMR(CDCl_3) δ : 1.06(1H, m), 1.16-1.30(2H, m), 1.38-1.50(2H, m), 1.54-1.77(4H, m), 1.98-2.18(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.51(1H, m), 3.80(1H, m), 5.30-5.42(2H, m), 6.03(1H, d, $J=7.2\text{Hz}$), 7.04-7.06(2H, m), 7.32-7.35(2H, m), 7.37(1H, d, $J=3.6\text{Hz}$).

15 IR(CHCl_3): 3509, 3444, 3426, 3110, 2667, 1708, 1645, 1530, 1499, 1421 cm^{-1} .

$[\alpha]_{\text{D}}^{26.5} + 69.5 \pm 1.1^\circ$ ($c=1.001$, MeOH)

Elemental Analysis ($\text{C}_{23}\text{H}_{27}\text{NO}_3\text{S}_3 \cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 59.61; H, 5.92; N, 3.02; S, 20.76

Found(%): C, 59.66; H, 5.90; N, 3.15; S, 20.52

20 Compound I-80

300MHz ^1H -NMR(CDCl_3) δ : 1.10(1H, m), 1.17-1.32(2H, m), 1.38-1.48(2H, m), 1.54-1.77(4H, m), 2.00-2.20(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.53(1H, m), 3.81(1H, m), 5.31-5.43(2H, m), 6.31(1H, d, $J=7.2\text{Hz}$), 7.37-7.44(3H, m), 7.61(1H, d, $J=3.9\text{Hz}$), 8.15(1H, dd, $J=1.2$ and 3.0Hz).

25 IR(CHCl_3): 3517, 3441, 3371, 3114, 1708, 1655, 1530, 1504, 1331, 1152 cm^{-1} .

$[\alpha]_{\text{D}}^{26.5} + 73.9 \pm 1.1^\circ$ ($c=1.001$, MeOH)

Elemental Analysis ($\text{C}_{23}\text{H}_{27}\text{NO}_5\text{S}_3 \cdot 0.3\text{H}_2\text{O}$)

Calcd.(%): C, 55.35; H, 5.57; N, 2.81; S, 19.28

Found(%): C, 55.47; H, 5.50; N, 2.80; S, 19.09

Compound I-81

300MHz ^1H -NMR(CDCl_3) δ : 1.05(1H, m), 1.16-1.30(2H, m), 1.38-1.48(2H, m),
5 1.54-1.77(4H, m), 1.98-2.17(5H, m), 2.34(2H, t, $J=7.2\text{Hz}$), 2.46(3H, d, $J=0.9\text{Hz}$),
2.50(1H, m), 3.79(1H, m), 5.29-5.41(2H, m), 5.99(1H, d, $J=7.2\text{Hz}$), 6.67(1H, m),
6.99, 7.10 and 7.32(each 1H, each d, each $J=3.9\text{Hz}$).

IR(CHCl_3): 3517, 3445, 3426, 2668, 1708, 1644, 1530, 1499, 1420, cm^{-1} .

$[\alpha]_{\text{D}}^{26} +66.1 \pm 1.1^\circ$ ($c=1.002$, MeOH)

10 Elemental Analysis ($\text{C}_{24}\text{H}_{29}\text{NO}_3\text{S}_3 \cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 60.37; H, 6.16; N, 2.93; S, 20.15

Found(%): C, 60.21; H, 6.10; N, 2.90; S, 20.45

Compound I-82

300MHz ^1H -NMR(CDCl_3) δ : 1.11(1H, m), 1.18-1.32(2H, m), 1.38-1.50(2H, m),
15 1.54-1.74(4H, m), 2.00-2.20(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.53(4H, d and m,
 $J=0.6\text{Hz}$), 3.80(1H, m), 5.31-5.43(2H, m), 6.34(1H, d, $J=6.6\text{Hz}$), 6.77(1H, m),
7.41, 7.55 and 7.58(each 1H, each d, each $J=3.9\text{Hz}$).

IR(CHCl_3): 3511, 3442, 3373, 3096, 1708, 1655, 1530, 1504, 1436, 1335, 1152
 cm^{-1} .

20 $[\alpha]_{\text{D}}^{26} +73.0 \pm 1.1^\circ$ ($c=1.002$, MeOH)

Elemental Analysis ($\text{C}_{24}\text{H}_{29}\text{NO}_5\text{S}_3 \cdot 0.3\text{H}_2\text{O}$)

Calcd.(%): C, 56.18; H, 5.81; N, 2.73; S, 18.75

Found(%): C, 56.26; H, 5.74; N, 2.65; S, 18.50

Compound I-83

25 300MHz ^1H -NMR(CDCl_3) δ : 1.17(1H, m), 1.24-1.36(2H, m), 1.37-1.82(6H, m),
2.01-2.23(5H, m), 2.36(2H, t, $J=7.2\text{Hz}$), 2.51(1H, m), 3.83(1H, m), 5.31-5.45(2H,
m), 7.17(1H, dd, $J=3.9$ and 5.4Hz), 7.36(1H, d, $J=7.8\text{Hz}$), 7.47(1H, dd, $J=1.5$

and 3.9Hz), 7.66(1H, dd, J=1.5 and 5.4Hz).

IR(CHCl₃): 3514, 3404, 3121, 1709, 1657, 1544, 1488, 1425 cm⁻¹.

[α]_D²⁵+73.2±2.2° (c=0.518, MeOH)

Elemental Analysis (C₂₂H₂₆N₂O₃·0.2H₂O)

5 Calcd.(%): C, 56.67; H, 5.71; N, 6.01; S, 20.63

Found(%): C, 56.55; H, 5.71; N, 6.03; S, 20.93

Compound I-84

300MHz ¹H-NMR(CDCl₃) δ : 1.07(1H, m), 1.20-1.32(2H, m), 1.43-1.48(2H, m),

1.57-1.82(4H, m), 2.02(1H, d, J=3.3Hz), 2.00-2.20(5H, m), 2.35(2H, t, J=7.2Hz),

10 2.55(1H, m), 3.86(1H, m), 4.01(2H, s), 5.29-5.43(2H, m), 6.17(1H, d, J=7.2Hz),

7.15-7.31(7H, m), 7.67(2H, d, J=8.1Hz).

IR(CHCl₃): 3517, 3447, 2669, 1708, 1651, 1523, 1495 cm⁻¹.

[α]_D²⁵+77.9±1.2° (c=1.016, MeOH)

Elemental Analysis (C₂₈H₃₃NO₃)

15 Calcd.(%): C, 77.93; H, 7.71; N, 3.25

Found(%): C, 77.65; H, 7.93; N, 3.32

Compound I-85

300MHz ¹H-NMR(CDCl₃) δ : 1.08(1H, m), 1.21-1.31(2H, m), 1.44-1.49(2H, m),

1.58-1.82(4H, m), 2.00-2.20(5H, m), 2.35(2H, t, J=7.2Hz), 2.56(1H, m), 3.87(1H,

20 m), 4.19(2H, s), 5.30-5.43(2H, m), 6.19(1H, d, J=7.2Hz), 6.80(1H, m), 6.93(1H,

dd, J=2.6 and 5.1Hz), 7.16(1H, dd, J=1.5 and 5.1Hz), 7.30 and 8.69(each 2H, each d, each J=8.1Hz).

IR(CHCl₃): 3510, 3446, 2664, 1708, 1651, 1523, 1496 cm⁻¹.

[α]_D²⁵+73.2±1.1° (c=1.009, MeOH)

25 Elemental Analysis (C₂₈H₃₁NO₃S)

Calcd.(%): C, 71.36; H, 7.14; N, 3.20; S, 7.33

Found(%): C, 71.48; H, 7.05; N, 3.29; S, 7.13

Compound I-86

300MHz ^1H -NMR(CDCl_3) δ : 1.07(1H, m), 1.19-1.31(2H, m), 1.43-1.48(2H, m),
1.58-1.81(4H, m), 2.00-2.17(5H, m), 2.34(2H, t, $J=7.2\text{Hz}$), 2.55(1H, m), 3.87(1H,
m), 3.98(2H, s), 5.30-5.43(2H, m), 6.19(1H, d, $J=7.2\text{Hz}$), 6.93-7.00(2H, m),

7.09-7.13(2H, m), 7.22 and 7.70(each 2H, each d, each $J=8.4\text{Hz}$).

IR(CHCl_3): 3516, 3447, 2664, 1709, 1651, 1612, 1522, 1509, 1496, cm^{-1} .

$[\alpha]_{\text{D}}^{25}+71.6\pm 1.1^\circ$ ($c=1.019$, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{32}\text{FNO}_3$)

Calcd.(%): C, 74.81; H, 7.17; N, 3.12; F, 4.23

10 Found(%): C, 74.66; H, 7.19; N, 3.13; F, 4.10

Compound I-87

300MHz ^1H -NMR(CDCl_3) δ : 1.08(1H, m), 1.20-1.31(2H, m), 1.44-1.49(2H, m),
1.58-1.82(4H, m), 2.00-2.22(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.56(1H, m), 3.87(1H,
m), 4.02(2H, s), 5.30-5.43(2H, m), 6.18(1H, d, $J=7.2\text{Hz}$), 6.88(1H, dd, $J=1.5$ and

15 4.8Hz), 6.92(1H, m), 7.25-7.28(3H, m), 7.68(2H, d, $J=8.1\text{Hz}$).

IR(CHCl_3): 3516, 3446, 2668, 1709, 1651, 1612, 1523, 1496 cm^{-1} .

$[\alpha]_{\text{D}}^{25}+72.7\pm 1.1^\circ$ ($c=1.014$, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{31}\text{NO}_3\cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 71.07; H, 7.16; N, 3.18; S, 7.30

20 Found(%): C, 70.90; H, 7.08; N, 3.21; S, 7.46

Compound I-88

mp.103-105°C

300MHz ^1H -NMR(CDCl_3) δ : 1.05(1H, m), 1.19-1.29(2H, m), 1.42-1.47(2H, m),
1.58-1.81(4H, m), 2.00-2.15(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.52(1H, m), 3.82(1H,
25 m), 4.16(2H, s), 5.30-5.43(2H, m), 5.97(1H, d, $J=7.5\text{Hz}$), 6.79(1H, dt, $J=0.9$ and
3.9Hz), 6.96(1H, dd, $J=1.5$ and 4.8Hz), 7.05(1H, m), 7.28(1H, dd, $J=3.0$ and
4.8Hz), 7.37(1H, d, $J=3.9\text{Hz}$).

IR(CHCl₃): 3516, 3445, 3427, 2670, 1708, 1642, 1544, 1507 cm⁻¹.

[α]_D²⁵+67.3±1.1° (c=1.002, MeOH)

Elemental Analysis (C₂₄H₂₉NO₃S₂·0.3H₂O)

Calcd.(%): C, 64.20; H, 6.64; N, 3.12; S, 14.28

5 Found(%): C, 64.29; H, 6.49; N, 3.10; S, 14.11

Compound I-89

300MHz ¹H-NMR(CDCl₃) δ : 1.07(1H, m), 1.20-1.29(2H, m), 1.40-1.49(2H, m),
1.56-1.89(4H, m), 2.00-2.25(5H, m), 2.32-2.38(2H, m), 2.51(1H, m), 3.80(1H, m),
5.04(2H, s), 5.27-5.41(2H, m), 5.90(1H, d, J=6.6Hz), 6.38(1H, m), 6.63(1H, t,
10 J=2.4Hz), 7.14-7.17(2H, m), 7.29-7.35(4H, m).

IR(CHCl₃): 3510, 3448, 2663, 1736, 1709, 1636, 1555, 1497 cm⁻¹.

[α]_D²⁵+60.8±1.0° (c=1.003, MeOH)

Elemental Analysis (C₂₈H₃₂N₂O₃·0.3H₂O)

Calcd.(%): C, 73.62; H, 7.70; N, 6.60

15 Found(%): C, 73.68; H, 7.62; N, 6.73

Compound I-90

300MHz ¹H-NMR(CDCl₃) δ : 1.06(1H, m), 1.20-1.29(2H, m), 1.40-1.48(2H, m),
1.56-1.87(4H, m), 2.00-2.24(5H, m), 2.32-2.38(2H, m), 2.50(1H, m), 3.80(1H, m),
5.19(2H, s), 5.27-5.41(2H, m), 5.90(1H, d, J=7.5Hz), 6.37(1H, dd, J=2.1 and
20 3.0Hz), 6.67(1H, t, J=2.4Hz), 6.95-6.98(2H, m), 7.27(1H, dd, J=1.8 and 4.5Hz),
7.31(1H, dd, J=1.8 and 2.1Hz).

IR(CHCl₃): 3513, 3448, 2661, 1709, 1637, 1555, 1497 cm⁻¹.

[α]_D²⁵+59.4±1.0° (c=1.011, MeOH)

Elemental Analysis (C₂₄H₃₀N₂O₃S·0.2H₂O)

25 Calcd.(%): C, 67.01; H, 7.12; N, 6.51; S, 7.45

Found(%): C, 67.07; H, 7.03; N, 6.62; S, 7.55

Compound I-91

300MHz ^1H -NMR(CDCl_3) δ : 1.06(1H, m), 1.23-1.26(2H, m), 1.39-1.48(2H, m), 1.57-1.82(4H, m), 2.00-2.16(5H, m), 2.34(2H, t, $J=7.2\text{Hz}$), 2.50(1H, m), 3.82(1H, m), 5.03(2H, s), 5.27-5.42(2H, m), 5.98(1H, brs), 6.40(1H, m), 6.91(1H, dd, $J=1.2$ and 4.8Hz), 7.08(1H, brs), 7.28-7.31(2H, m).

5 IR(CHCl_3): 3516, 3448, 3108, 2663, 1736, 1709, 1636, 1555, 1497 cm^{-1} .

$[\alpha]_{\text{D}}^{25} +59.8 \pm 1.0^\circ$ ($c=1.008$, MeOH)

Elemental Analysis ($\text{C}_{24}\text{H}_{30}\text{N}_2\text{O}_8\text{S} \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 67.01; H, 7.12; N, 6.51; S, 7.45

Found(%): C, 67.26; H, 7.06; N, 6.61; S, 7.55

10 Compound I-92

300MHz ^1H -NMR(CDCl_3) δ : 1.08(1H, m), 1.18-1.28(2H, m), 1.38-1.43(2H, m), 1.54-1.78(4H, m), 1.96-2.23(5H, m), 2.36(2H, dt, $J=1.8$ and 6.9Hz), 2.52(1H, m), 3.77(1H, m), 5.30-5.45(2H, m), 6.07(1H, d, $J=6.9\text{Hz}$), 6.58(1H, dd, $J=1.5$ and 3.3Hz), 7.14(1H, dd, $J=2.1$ and 3.3Hz), 7.51-7.57(2H, m), 7.65(1H, m), 7.77(1H, t, $J=2.1\text{Hz}$), 7.88-7.92(2H, m).

15 IR(CHCl_3): 3510, 3444, 3144, 1732, 1708, 1651, 1570, 1509, 1382, 1176 cm^{-1} .

$[\alpha]_{\text{D}}^{24} +55.9 \pm 0.9^\circ$ ($c=1.013$, MeOH)

Elemental Analysis ($\text{C}_{25}\text{H}_{30}\text{N}_2\text{O}_8\text{S} \cdot 0.3\text{H}_2\text{O}$)

Calcd.(%): C, 63.08; H, 6.48; N, 5.88; S, 6.74

20 Found(%): C, 63.24; H, 6.27; N, 6.03; S, 6.74

Compound I-93

300MHz ^1H -NMR(CDCl_3) δ : 1.06(1H, m), 1.18-1.29(2H, m), 1.39-1.47(2H, m), 1.56-1.78(4H, m), 1.98-2.18(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.52(1H, m), 3.81(1H, m), 4.33(2H, s), 5.29-5.42(2H, m), 6.03(1H, d, $J=7.5\text{Hz}$), 6.84(1H, d, $J=3.9\text{Hz}$), 6.90(1H, m), 6.95(1H, dd, $J=3.6$ and 5.1Hz), 7.19(1H, dd, $J=1.2$ and 5.1Hz), 7.38(1H, d, $J=3.9\text{Hz}$).

25 IR(CHCl_3): 3510, 3554, 3427, 1708, 1643, 1544, 1507 m^{-1} .

$[\alpha]_D^{27} + 70.1 \pm 1.1^\circ$ ($c = 1.010$, MeOH)

Elemental Analysis ($C_{24}H_{29}NO_5S_2 \cdot 0.1H_2O$)

Calcd.(%): C, 64.72; H, 6.61; N, 3.14; S, 14.40

Found(%): C, 64.83; H, 6.60; N, 3.31; S, 14.46

5 Compound I-94

300MHz 1H -NMR($CDCl_3$) δ : 1.09(1H, m), 1.20-1.27(2H, m), 1.40-1.44(2H, m), 1.56-1.78(4H, m), 2.00-2.19(5H, m), 2.36(2H, d, 7.2Hz), 2.51(1H, m), 3.78(1H, m), 5.30-5.44(2H, m), 6.13(1H, d, $J = 6.9$ Hz), 6.59(1H, dd, $J = 1.5$ and 3.3Hz), 7.10(1H, dd, $J = 3.6$ and 5.1Hz), 7.16(1H, dd, $J = 2.1$ and 3.3Hz), 7.69-7.76(3H, m).

IR($CHCl_3$): 3510, 3444, 3143, 1708, 1651, 1571, 1508, 1387, 1179 cm^{-1} .

$[\alpha]_D^{24} + 56.0 \pm 1.0^\circ$ ($c = 1.005$, MeOH)

Elemental Analysis ($C_{23}H_{28}N_2O_5S_2 \cdot 0.2H_2O$)

Calcd.(%): C, 57.53; H, 5.96; N, 5.83; S, 13.35

15 Found(%): C, 57.54; H, 6.07; N, 5.93; S, 12.91

Compound I-95

300MHz 1H -NMR($CDCl_3$) δ : 1.16(1H, m), 1.26-1.37(2H, m), 1.40-1.81(6H, m), 2.04-2.25(5H, m), 2.36(2H, t, $J = 7.2$ Hz), 2.53(1H, m), 3.87(1H, m), 5.32-5.46(2H, m), 6.37(2H, t, $J = 2.1$ Hz), 7.31(1H, d, $J = 7.5$ Hz), 7.33(2H, t, $J = 2.1$ Hz), 7.82(1H, m).

IR($CHCl_3$): 3512, 3408, 3127, 1708, 1658, 1540, 1525, 1493, 1341 cm^{-1} .

$[\alpha]_D^{25} + 88.2 \pm 1.3^\circ$ ($c = 1.003$, MeOH)

Elemental Analysis ($C_{22}H_{27}N_3O_5S \cdot 0.1H_2O$)

Calcd.(%): C, 63.62; H, 6.60; N, 10.12; S, 7.72

25 Found(%): C, 63.72; H, 6.45; N, 9.99; S, 7.75

Compound I-96

300MHz 1H -NMR($CDCl_3$) δ : 1.07(1H, m), 1.18-1.30(2H, m), 1.39-1.48(2H, m),

1.57-1.78(4H, m), 2.01-2.22(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.52(1H, m), 3.80(1H, m), 5.30-5.43(2H, m), 6.11(1H, m), 6.98(1H, dd, $J=3.6$ and 5.4Hz), 7.24(1H, dd, $J=1.2$ and 3.6Hz), 7.38(1H, dd, $J=1.2$ and 5.4Hz), 7.43(1H, d, $J=1.5\text{Hz}$), 7.85(1H, d, $J=1.5\text{Hz}$).

5 IR(CHCl_3): 3510, 3445, 3108, 1708, 1650, 1535, 1498 cm^{-1} .

$[\alpha]_{\text{D}}^{25} +70.7 \pm 1.1^\circ$ ($c=1.004$, MeOH)

Elemental Analysis ($\text{C}_{23}\text{H}_{27}\text{NO}_3\text{S}_3 \cdot 0.3\text{H}_2\text{O}$)

Calcd.(%): C, 59.15; H, 5.96; N, 3.00; S, 20.60

Found(%): C, 59.06; H, 5.66; N, 3.07; S, 20.87

10 Compound I-97

300MHz ^1H -NMR(CDCl_3) δ : 1.20-2.52(16H, m), 2.61(1H, m), 3.72(1H, m), 5.34-5.55(2H, m), 6.66(1H, d, $J=6.3\text{Hz}$), 71.2(1H, m), 7.71(1H, m), 7.75(1H, m), 8.29(1H, m), 8.37(1H, brs).

IR(CHCl_3): 3512, 3405, 3096, 1726, 1710, 1653, 1542, 1505, 1402, 1329, 1152

15 cm^{-1} .

$[\alpha]_{\text{D}}^{25} +65.4 \pm 1.1^\circ$ ($c=1.005$, MeOH)

Elemental Analysis ($\text{C}_{23}\text{H}_{27}\text{NO}_5\text{S}_3 \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 55.55; H, 5.55; N, 2.82; S, 19.35

Found(%): C, 55.47; H, 5.54; N, 3.09; S, 19.21

20 Compound I-98

mp.103-104°C

300MHz ^1H -NMR(CDCl_3) δ : 1.09(1H, m), 1.23-1.31(2H, m), 1.45-1.50(2H, m), 1.60-1.80(4H, m), 2.00-2.23(5H, m), 2.37(2H, t, $J=7.2\text{Hz}$), 2.55(1H, m), 3.85(1H, m), 5.31-5.45(2H, m), 6.05(1H, d, $J=7.5\text{Hz}$), 6.98 and 7.04(each 1H, each d,

25 each $J=16.2\text{Hz}$), 6.97(1H, d, $J=3.9\text{Hz}$), 7.25-7.33(3H, m), 7.41(1H, d, $J=3.9\text{Hz}$).

IR(CHCl_3): 3511, 3445, 3428, 2665, 1708, 1641, 1538, 1519, 1499 cm^{-1} .

$[\alpha]_{\text{D}}^{24} +77.8 \pm 1.2^\circ$ ($c=1.007$, MeOH)

Elemental Analysis ($C_{25}H_{29}NO_3S_2 \cdot 0.25AcOEt$)

Calcd.(%): C, 65.38; H, 6.54; N, 2.93; S, 13.43

Found(%): C, 65.64; H, 6.62; N, 2.95; S, 13.26

Compound I-99

5 300MHz 1H -NMR($CDCl_3$) δ : 1.05(1H, m), 1.20-1.30(2H, m), 1.41-1.46(2H, m),
1.59-1.80(4H, m), 2.00-2.20(5H, m), 2.35(2H, t, $J=7.2Hz$), 2.52(1H, m), 3.80(1H,
m), 5.30-5.43(2H, m), 5.94(1H, d, $J=6.9Hz$), 6.57(2H, s), 6.94(1H, d, $J=3.9Hz$),
7.03(1H, dd, $J=1.5$ and $4.5Hz$), 7.29(1H, s), 7.30(1H, m), 7.34(1H, d, $J=3.9Hz$).
IR($CHCl_3$): 3511, 3445, 3427, 2670, 1708, 1642, 1536, 1518, 1500 cm^{-1} .

10 $[\alpha]_D^{24} + 62.8 \pm 1.0^\circ$ ($c=1.003$, MeOH)

Elemental Analysis ($C_{26}H_{29}NO_3S_2 \cdot 0.2AcOEt$)

Calcd.(%): C, 65.48; H, 6.52; N, 2.96; S, 13.55

Found(%): C, 65.36; H, 6.47; N, 2.13; S, 13.58

Compound I-100

15 300MHz 1H -NMR($CDCl_3$) δ : 1.06(1H, m), 1.17-1.32(2H, m), 1.38-1.50(2H, m),
1.56-1.80(4H, m), 1.98-2.20(5H, m), 2.35(2H, t, $J=7.2Hz$), 2.44(3H, d, $J=0.9Hz$),
2.52(1H, m), 3.80(1H, m), 5.30-5.43(2H, m), 5.99(1H, d, $J=7.5Hz$), 5.99(1H, d,
 $J=7.5Hz$), 6.70(1H, m), 7.03(1H, d, $J=3.9Hz$), 7.10(1H, d, $J=1.5Hz$), 7.36(1H, d,
 $J=3.9Hz$).

20 IR($CHCl_3$): 3510, 3445, 3426, 2671, 1708, 1644, 1530, 1499, 1420, 1318 cm^{-1} .

$[\alpha]_D^{25} + 69.1 \pm 1.1^\circ$ ($c=1.018$, MeOH)

Elemental Analysis ($C_{24}H_{29}NO_3S_3$)

Calcd.(%): C, 60.60; H, 6.14; N, 2.94; S, 20.22

Found(%): C, 60.49; H, 6.26; N, 2.98; S, 20.25

25 Compound I-101

300MHz 1H -NMR($CDCl_3$) δ : 1.10(1H, m), 1.18-1.32(2H, m), 1.38-1.50(2H, m),
1.54-1.77(4H, m), 2.00-2.20(5H, m), 2.36(2H, t, $J=7.2Hz$), 2.47(3H, d, $J=0.9Hz$),

2.53(1H, m), 3.81(1H, m), 5.31-5.44(2H, m), 6.30(1H, d, $J=7.2\text{Hz}$), 7.03(1H, m), 7.42 and 7.59(each 1H, each d, each $J=3.9\text{Hz}$), 7.90(1H, d, $J=1.5\text{Hz}$).
IR(CHCl_3): 3517, 3441, 3370, 3115, 2671, 1708, 1655, 1530, 1504, 1442, 1328, 1156, 1142 cm^{-1} .

5 $[\alpha]_{\text{D}}^{24} + 71.6 \pm 1.1^\circ$ ($c=1.018$, MeOH)

Elemental Analysis ($\text{C}_{24}\text{H}_{29}\text{NO}_5\text{S}_3 \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 56.38; H, 5.80; N, 2.74; S, 18.81

Found(%): C, 56.28; H, 5.74; N, 2.79; S, 18.92

Compound I-102

10 300MHz ^1H -NMR(CDCl_3) δ : 1.09(1H, m), 1.21-1.28(2H, m), 1.42-1.47(2H, m), 1.57-1.74(4H, m), 2.00-2.18(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.53(1H, m), 3.82(1H, m), 5.30-5.43(2H, m), 6.15(1H, d, $J=7.5\text{Hz}$), 6.51 and 6.68(each 1H, each d, $J=11.7\text{Hz}$), 6.98(1H, dd, $J=3.6$ and 5.1Hz), 7.06(1H, dd, $J=0.9$ and 3.9Hz), 7.13(1H, dt, $J=0.9$ and 3.6Hz), 7.25(1H, dd, $J=0.9$ and 5.1Hz), 7.41(1H, d, $J=3.9\text{Hz}$).

15 IR(CHCl_3): 3510, 3445, 3427, 2665, 1708, 1643, 1535, 1501 cm^{-1} .

$[\alpha]_{\text{D}}^{24} + 68.6 \pm 1.1^\circ$ ($c=1.006$, MeOH)

Elemental Analysis ($\text{C}_{25}\text{H}_{29}\text{NO}_3\text{S}_2 \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 65.45; H, 6.45; N, 3.05; S, 13.98

20 Found(%): C, 65.44; H, 6.37; N, 3.28; S, 13.82

Compound I-103

mp. 107-108°C

300MHz ^1H -NMR(CDCl_3) δ : 1.09(1H, m), 1.26-1.32(2H, m), 1.45-1.50(2H, m), 1.60-1.81(4H, m), 2.01-2.23(5H, m), 2.37(2H, t, $J=7.2\text{Hz}$), 2.55(1H, m), 3.84(1H, m), 5.31-5.45(2H, m), 6.03(1H, d, $J=7.5\text{Hz}$), 6.97 and 7.14(each 1H, each d, $J=15.9\text{Hz}$), 6.97(1H, d, $J=3.9\text{Hz}$), 7.01(1H, dd, $J=3.6$ and 5.4Hz), 7.08(1H, d, $J=3.6\text{Hz}$), 7.23(1H, d, $J=5.4\text{Hz}$), 7.40(1H, d, $J=3.9\text{Hz}$).

IR(CHCl₃): 3517, 3445, 3428, 2670, 1708, 1641, 1536, 1518, 1500 cm⁻¹.

[α]_D²⁴+85.0 \pm 1.2° (c=1.009, MeOH)

Elemental Analysis (C₂₅H₂₉NO₃S₂·0.15AcOEt)

Calcd.(%): C, 65.58; H, 6.49; N, 2.99; S, 13.68

5 Found(%): C, 65.88; H, 6.74; N, 2.98; S, 13.35

Compound I-104

300MHz ¹H-NMR(CDCl₃) δ : 1.07(1H, m), 1.19-1.30(2H, m), 1.42-1.50(2H, m),
1.57-1.79(4H, m), 2.01-2.24(5H, m), 2.36(2H, t, J=7.2Hz), 2.53(1H, m), 3.82(1H,
m), 4.10(sH, s), 5.31-5.44(2H, m), 6.03(1H, d, J=7.2Hz), 6.70(1H, d, J=3.6Hz),
10 6.95(1H, dd, J=3.6 and 5.4Hz), 7.03(1H, dd, J=1.5 and 3.6Hz), 7.30(1H, d,
J=3.6Hz), 7.36(1H, dd, J=1.5 and 5.4Hz).

IR(CHCl₃): 3518, 3445, 3427, 1708, 1644, 1542, 1507 cm⁻¹.

[α]_D^{24.5}+65.0 \pm 1.0° (c=1.008, MeOH)

Elemental Analysis (C₂₄H₂₉NO₃S₂·0.4H₂O)

15 Calcd.(%): C, 59.69; H, 6.22; N, 2.90; S, 19.92

Found(%): C, 59.40; H, 5.98; N, 2.95; S, 20.06

Compound I-105

300MHz ¹H-NMR(CDCl₃) δ : 1.11(1H, m), 1.21-1.31(2H, m), 1.42-1.49(2H, m),
1.58-1.76(4H, m), 2.01-2.21(5H, m), 2.36(2H, t, J=7.2Hz), 2.53(1H, m), 3.81(1H,
20 m), 4.60(sH, s), 5.32-5.45(2H, m), 6.18(1H, d, J=7.2Hz), 6.91(1H, d, J=3.9Hz),
7.12(1H, dd, J=3.9 and 5.1Hz), 7.40(1H, d, J=3.9Hz), 7.52(1H, dd, J=1.2 and
3.9Hz), 7.72(1H, dd, J=1.2 and 5.1Hz).

IR(CHCl₃): 3517, 3444, 3425, 3097, 1708, 1648, 1524, 1508, 1402, 1328, 1147
cm⁻¹.

25 [α]_D^{24.5}+61.5 \pm 1.0° (c=1.008, MeOH)

Elemental Analysis (C₂₄H₂₉NO₅S₂·0.4H₂O)

Calcd.(%): C, 55.98; H, 5.83; N, 2.72; S, 18.68

Found(%): C, 55.77; H, 5.71; N, 2.84; S, 18.73

Compound I-106

300MHz ¹H-NMR(CDCl₃) δ: 1.07(1H, m), 1.19-1.31(2H, m), 1.41-1.49(2H, m),
1.57-1.78(4H, m), 2.00-2.21(5H, m), 2.36(2H, t, J=7.2Hz), 2.53(1H, m), 3.81(1H,
5 m), 4.23(sH, s), 5.31-5.44(2H, m), 6.00(1H, d, J=7.2Hz), 6.82(1H, m), 6.88(1H,
dd, J=3.6 and 5.1Hz), 6.92(1H, d, J=3.6Hz), 7.21(1H, dd, J=1.2 and 5.1Hz),
7.33(1H, d, J=3.6Hz).

IR(CHCl₃): 3514, 3444, 3427, 2665, 1709, 1645, 1529, 1498, 1421, 1317 cm⁻¹.

[α]_D²⁴+67.1±1.1° (c=1.006, MeOH)

10 Elemental Analysis (C₂₄H₂₉NO₃S₃·0.1H₂O)

Calcd.(%): C, 60.37; H, 6.16; N, 2.90; S, 20.15

Found(%): C, 60.46; H, 6.14; N, 2.96; S, 20.02

Compound I-107

300MHz ¹H-NMR(CDCl₃) δ: 1.09-1.32(3H, m), 1.38-1.48(2H, m), 1.53-1.79(4H,
15 m), 1.96-2.20(5H, m), 2.34(2H, t, J=7.2Hz), 2.54(4H, d and m, J=0.6Hz),
3.79(1H, m), 5.30-5.45(2H, m), 6.48 and 6.51(total 1H, each d, J=7.8 and 7.5Hz),
7.12(1H, dd, J=3.9 and 5.1Hz), 7.42 and 7.43(total 1H, each d, each J=3.9Hz),
7.52 and 7.53(total 1H, each d, each J=3.9Hz), 7.58(1H, m), 7.69(1H, dd, J=1.2
and 5.1Hz).

20 IR(CHCl₃): 3509, 3443, 3425, 3092, 2666, 1708, 1650, 1532, 1503, 1403, 1322
cm⁻¹.

[α]_D²³+70.4±1.1° (c=1.007, MeOH)

Elemental Analysis (C₂₃H₂₇NO₄S₃·0.4H₂O)

Calcd.(%): C, 56.97; H, 5.78; N, 2.89; S, 19.84

25 Found(%): C, 57.03; H, 5.67; N, 3.19; S, 19.73

Compound I-108

300MHz ¹H-NMR(CDCl₃) δ: 1.09-1.32(3H, m), 1.39-1.50(2H, m), 1.54-1.77(4H,

m), 1.97-2.20(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.52 and 2.53(total 3H, each s), 2.54(1H, m), 3.79(1H, m), 5.31-5.45(2H, m), 6.43 and 6.47(total 1H, each d, $J=7.5$ and 6.6Hz), 6.76(1H, m), 7.39(1H, t-like), 7.40(1H, dd, $J=2.1$ and 3.6Hz), 7.52(1H, dd, $J=2.1$ and 4.2Hz).

5 IR(CHCl_3): 3510, 3443, 3425, 3092, 1708, 1650, 1531, 1503, 1437, 1237 cm^{-1} .

$[\alpha]_{\text{D}}^{23} + 68.6 \pm 1.1^\circ$ ($c=1.011$, MeOH)

Elemental Analysis ($\text{C}_{24}\text{H}_{29}\text{NO}_4\text{S}_2 \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 58.20; H, 5.98; N, 2.83; S, 19.42

Found(%): C, 58.18; H, 5.67; N, 2.90; S, 19.11

10 Compound I-109

300MHz ^1H -NMR(CDCl_3) δ : 1.13(1H, m), 1.21-1.34(2H, m), 1.45-1.52(2H, m), 1.59-1.78(4H, m), 2.03-2.23(5H, m), 2.37(2H, t, $J=7.2\text{Hz}$), 2.58(1H, m), 3.86(1H, m), 5.32-5.46(2H, m), 6.28(1H, d, $J=6.6\text{Hz}$), 7.20(1H, dd, $J=3.9$ and 5.1Hz), 7.59(1H, d, $J=3.9\text{Hz}$), 7.75(1H, dd, $J=1.2$ and 5.1Hz), 7.81(1H, d, $J=3.9\text{Hz}$),

15 7.92(1H, dd, $J=1.2$ and 3.9Hz).

IR(CHCl_3): 3518, 3442, 3425, 3109, 1709, 1651, 1622, 1529, 1508, 1442, 1414, 1356, 1286, 1267 cm^{-1} .

$[\alpha]_{\text{D}}^{23} + 89.2 \pm 1.3^\circ$ ($c=1.002$, MeOH)

Elemental Analysis ($\text{C}_{24}\text{H}_{27}\text{NO}_4\text{S}_2 \cdot 0.2\text{H}_2\text{O}$)

20 Calcd.(%): C, 62.50; H, 5.99; N, 3.04; S, 13.90

Found(%): C, 62.63; H, 6.07; N, 2.97; S, 13.60

Compound I-110

300MHz ^1H -NMR(CDCl_3) δ : 1.12(1H, m), 1.22-1.33(2H, m), 1.44-1.52(2H, m), 1.59-1.79(4H, m), 2.03-2.24(5H, m), 2.37(2H, t, $J=7.2\text{Hz}$), 2.57(1H, m), 3.87(1H, m), 4.14(3H, s), 5.32-5.47(2H, m), 6.14(1H, d, $J=7.5\text{Hz}$), 7.08(1H, dd, $J=3.9$ and 5.4Hz), 7.27(1H, dd, $J=1.2$ and 3.9Hz), 7.39(1H, dd, $J=1.2$ and 5.4Hz), 7.41(1H, d, $J=3.9\text{Hz}$), 7.49(1H, d, $J=3.9\text{Hz}$).

IR(CHCl₃): 3516, 3444, 3425, 2665, 1709, 1649, 1529, 1498, 1049 cm⁻¹.

[α]_D²⁴+73.3±1.1° (c=1.003, MeOH)

Elemental Analysis (C₂₆H₃₀N₂O₄S₂·0.6H₂O)

Calcd.(%): C, 60.36; H, 6.32; N, 5.63; S, 12.89

5 Found(%): C, 60.30; H, 6.14; N, 5.84; S, 12.95

Compound I-111

300MHz ¹H-NMR(CDCl₃) δ : 1.08(1H, m), 1.19-1.30(2H, m), 1.40-1.50(2H, m),
1.55-1.82(4H, m), 1.98-2.21(5H, m), 2.36(2H, t, J=7.2Hz), 2.53(1H, m), 3.83(1H,
m), 5.30-5.44(2H, m), 5.96(1H, d, J=7.5Hz), 6.43(1H, br), 6.52(1H, d, J=3.9Hz),
10 6.90(1H, m), 7.08-7.11(2H, m), 7.26-7.32(3H, m).

IR(CHCl₃): 3514, 3444, 3419, 1739, 1709, 1633, 1601, 1500, 1456 cm⁻¹.

[α]_D²²+86.6±1.3° (c=1.005, MeOH)

Elemental Analysis (C₂₅H₃₀N₂O₃S·0.1H₂O)

Calcd.(%): C, 68.18; H, 6.91; N, 6.36; S, 7.28

15 Found(%): C, 68.11; H, 6.95; N, 6.43; S, 7.31

Compound I-112

300MHz ¹H-NMR(CDCl₃) δ : 1.05(1H, m), 1.18-1.30(2H, m), 1.39-1.48(2H, m),
1.54-1.83(4H, m), 1.98-2.21(5H, m), 2.35(2H, t, J=7.2Hz), 2.51(1H, m), 3.38(3H,
s), 3.80(1H, m), 5.29-5.42(2H, m), 5.82(1H, d, J=6.0Hz), 6.15(1H, d, J=4.2Hz),
20 7.11-7.39(6H, m).

IR(CHCl₃): 3514, 3446, 3425, 1741, 1709, 1628, 1597, 1477, 1415 cm⁻¹.

[α]_D²²+83.2±1.2° (c=1.001, MeOH)

Elemental Analysis (C₂₆H₃₂N₂O₃S)

Calcd.(%): C, 69.00; H, 7.13; N, 6.19; S, 7.08

25 Found(%): C, 68.74; H, 7.08; N, 6.15; S, 7.01

Compound I-113

300MHz ¹H-NMR(CDCl₃) δ : 1.07(1H, m), 1.18-1.31(2H, m), 1.40-1.49(2H, m),

1.55-1.75(4H, m), 1.99-2.16(5H, m), 2.31(3H, s), 2.35(2H, t, $J=7.2\text{Hz}$), 2.52(1H, m), 3.82(1H, m), 5.31-5.43(2H, m), 6.06(1H, d, $J=7.5\text{Hz}$), 7.03-7.20(5H, m), 7.44(1H, d, $J=3.9\text{Hz}$).

IR(CHCl_3): 3516, 3444, 3425, 2671, 1709, 1647, 1529, 1498, 1421, 1317 cm^{-1} .

5 $[\alpha]_{\text{D}}^{23}+70.2\pm 1.1^\circ$ ($c=1.001$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{31}\text{NO}_3\text{S}_2$)

Calcd.(%): C, 66.49; H, 6.65; N, 2.98; S, 13.65

Found(%): C, 66.34; H, 6.74; N, 2.94; S, 13.78

Compound I-114

10 mp.114-116°C

300MHz ^1H -NMR(CDCl_3) δ : 1.09(1H, m), 1.18-1.32(2H, m), 1.37-1.47(2H, m), 1.55-1.75(4H, m), 2.00-2.18(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.42(3H, s), 2.52(1H, m), 3.80(1H, m), 5.30-5.43(2H, m), 6.23(1H, d, $J=7.5\text{Hz}$), 7.41(3H, m), 7.59(1H, d, $J=3.9\text{Hz}$), 7.78(2H, m).

15 IR(CHCl_3): 3514, 3442, 3371, 2669, 1707, 1655, 1529, 1504, 1329, 1151 cm^{-1} .

$[\alpha]_{\text{D}}^{23}+72.4\pm 1.1^\circ$ ($c=1.004$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{31}\text{NO}_5\text{S}_2$)

Calcd.(%): C, 62.25; H, 6.23; N, 2.79; S, 12.78

Found(%): C, 61.83; H, 6.39; N, 2.73; S, 12.78

20 Compound I-115

300MHz ^1H -NMR(CDCl_3) δ : 1.07(1H, m), 1.18-1.31(2H, m), 1.40-1.50(2H, m), 1.56-1.78(4H, m), 1.99-2.20(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.53(1H, m), 3.77(3H, s), 3.82(1H, m), 5.31-5.43(2H, m), 6.06(1H, d, $J=7.2\text{Hz}$), 6.74-6.89(3H, m), 7.16-7.23(2H, m), 7.45(1H, d, $J=3.9\text{Hz}$).

25 IR(CHCl_3): 3516, 3444, 3425, 2665, 1709, 1647, 1591, 1529, 1498, 1477, 1423 cm^{-1} .

$[\alpha]_{\text{D}}^{23}+68.7\pm 1.1^\circ$ ($c=1.014$, MeOH)

Elemental Analysis ($C_{26}H_{31}NO_4S_2$)

Calcd.(%): C, 64.30; H, 6.43; N, 2.88; S, 13.20

Found(%): C, 64.04; H, 6.56; N, 2.87; S, 13.43

Compound I-116

5 mp.67-70°C

300MHz 1H -NMR($CDCl_3$) δ : 1.09(1H, m), 1.17-1.32(2H, m), 1.39-1.47(2H, m), 1.55-1.75(4H, m), 2.00-2.20(5H, m), 2.35(2H, t, $J=7.2$ Hz), 2.52(1H, m), 3.80(1H, m), 3.86(3H, s), 5.30-5.43(2H, m), 6.26(1H, d, $J=7.2$ Hz), 7.12(1H, m), 7.40-7.47(2H, m), 7.55(1H, m), 7.59(1H, d, $J=3.9$ Hz).

10 IR($CHCl_3$): 3514, 3442, 3373, 1707, 1655, 1599, 1529, 1504, 1481, 1327, 1151 cm^{-1} .

$[\alpha]_D^{25}+70.0\pm1.1^\circ$ ($c=1.008$, MeOH)

Elemental Analysis ($C_{26}H_{31}NO_5S_2\cdot0.7H_2O$)

Calcd.(%): C, 58.89; H, 6.16; N, 2.64; S, 12.09

15 Found(%): C, 58.87; H, 6.15; N, 2.74; S, 12.10

Compound I-117

300MHz 1H -NMR($CDCl_3$) δ : 1.10-1.32(3H, m), 1.37-1.46(2H, m), 1.55-1.73(4H, m), 1.94-2.18(5H, m), 2.34(2H, t, $J=7.2$ Hz), 2.55(1H, m), 3.78(1H, m), 5.29-5.45(2H, m), 6.56(1H, d, $J=6.6$ Hz), 7.09(1H, m), 7.37(1H, t, $J=8.1$ Hz), 7.45(1H, d, $J=3.9$ Hz), 7.47-7.53(2H, m), 7.55(1H, d, $J=3.9$ Hz).

20 IR(KBr): 3365, 3095, 1707, 1628, 1543, 1448, 1306, 1147 cm^{-1} .

$[\alpha]_D^{25}+70.8\pm1.1^\circ$ ($c=1.003$, MeOH)

Elemental Analysis ($C_{25}H_{29}NO_5S_2\cdot0.3H_2O$)

Calcd.(%): C, 58.99; H, 5.86; N, 2.75; S, 12.60

25 Found(%): C, 58.85; H, 5.85; N, 2.67; S, 12.77

Compound I-118

mp.133-134°C

300MHz $^1\text{H-NMR}(\text{CDCl}_3)$ δ : 1.08(1H, m), 1.18-1.32(2H, m), 1.40-1.49(2H, m), 1.55-1.78(4H, m), 1.96-2.24(5H, m), 2.34(2H, t, $J=7.2\text{Hz}$), 2.52(1H, m), 3.81(1H, m), 5.31-5.46(2H, m), 6.14(1H, d, $J=6.6\text{Hz}$), 6.71(2H, m), 6.86(1H, m), 7.14(2H, m), 7.42(1H, d, $J=3.9\text{Hz}$).

5 IR(Nujol): 3336, 3091, 2656, 1703, 1603, 1581, 1545 cm^{-1} .

$[\alpha]_{\text{D}}^{25}+73.2\pm 1.1^\circ$ ($c=1.007$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{29}\text{NO}_4\text{S}_2$)

Calcd.(%): C, 63.67; H, 6.20; N, 2.97; S, 13.60

Found(%): C, 63.78; H, 6.17; N, 3.10; S, 13.73

10 Compound I-119

300MHz $^1\text{H-NMR}(\text{CDCl}_3)$ δ : 1.05(1H, m), 1.17-1.30(2H, m), 1.38-1.48(2H, m), 1.54-1.80(4H, m), 1.98-2.20(5H, m), 2.34(2H, t, $J=7.2\text{Hz}$), 2.51(1H, m), 3.79(3H, s), 3.81(1H, m), 4.10(2H, s), 5.29-5.42(2H, m), 5.97(1H, d, $J=7.5\text{Hz}$), 6.77-6.84(4H, m), 7.23(2H, m), 7.37(1H, d, $J=3.9\text{Hz}$).

15 IR(CHCl_3): 3514, 3446, 3427, 1741, 1709, 1641, 1543, 1506, 1456 cm^{-1} .

$[\alpha]_{\text{D}}^{22}+64.3\pm 1.0^\circ$ ($c=1.005$, MeOH)

Elemental Analysis ($\text{C}_{27}\text{H}_{33}\text{NO}_4\text{S}\cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 69.08; H, 7.13; N, 2.98; S, 6.83

Found(%): C, 69.03; H, 7.25; N, 3.06; S, 7.00

20 Compound I-120

300MHz $^1\text{H-NMR}(\text{CDCl}_3)$ δ : 1.07(1H, m), 1.16-1.28(2H, m), 1.36-1.46(2H, m), 1.52-1.78(4H, m), 1.96-2.17(5H, m), 2.32(2H, t, $J=7.2\text{Hz}$), 2.50(1H, m), 3.80(1H, m), 4.02(2H, s), 5.28-5.42(2H, m), 6.16(1H, d, $J=7.5\text{Hz}$), 6.72-6.77(4H, m), 7.14(1H, m), 7.36(1H, d, $J=3.9\text{Hz}$).

25 IR(CHCl_3): 3595, 3423, 3207, 1707, 1635, 1599, 1545, 1508, 1456 cm^{-1} .

$[\alpha]_{\text{D}}^{23}+66.8\pm 1.1^\circ$ ($c=1.009$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{31}\text{NO}_4\text{S}\cdot 0.4\text{H}_2\text{O}$)

Calcd.(%): C, 67.77; H, 6.96; N, 3.04; S, 6.96

Found(%): C, 67.83; H, 6.92; N, 3.18; S, 7.14

Compound I-121

300MHz ^1H -NMR(CDCl_3) δ : 1.06(1H, m), 1.18-1.31(2H, m), 1.40-1.48(2H, m),
5 1.55-1.82(4H, m), 1.98-2.22(5H, m), 2.29(3H, s), 2.35(2H, t, $J=7.2\text{Hz}$), 2.52(1H, m),
3.80(1H, m), 4.14(2H, s), 5.29-5.43(2H, m), 5.97(1H, d, $J=7.5\text{Hz}$),
6.78(1H, m), 6.94-7.00(2H, m), 7.10(1H, m), 7.33(1H, m), 7.36(1H, d, $J=3.9\text{Hz}$).
IR(CHCl_3): 3514, 3446, 3427, 2669, 1763, 1745, 1709, 1643, 1545, 1506, 1371
 cm^{-1} .

10 $[\alpha]_{\text{D}}^{25}+61.3\pm 1.0^\circ$ ($c=1.019$, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{33}\text{NO}_5\text{S}\cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 67.61; H, 6.73; N, 2.82; S, 6.45

Found(%): C, 67.52; H, 6.77; N, 2.99; S, 6.48

Compound I-122

15 300MHz ^1H -NMR(CDCl_3) δ : 1.06(1H, m), 1.18-1.30(2H, m), 1.40-1.48(2H, m),
1.56-1.76(4H, m), 1.99-2.17(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.52(1H, m), 3.81(1H, m),
4.25(2H, s), 5.30-5.43(2H, m), 6.00(1H, d, $J=7.5\text{Hz}$), 6.81(1H, d, $J=3.9\text{Hz}$),
7.20-7.36(6H, m).

IR(CHCl_3): 3516, 3446, 3427, 2667, 1709, 1643, 1543, 1506 cm^{-1} .

20 $[\alpha]_{\text{D}}^{25}+65.0\pm 1.0^\circ$ ($c=1.008$, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{31}\text{NO}_5\text{S}_2\cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 66.24; H, 6.67; N, 2.97; S, 13.60

Found(%): C, 66.14; H, 6.63; N, 3.05; S, 13.49

Compound I-123

25 300MHz ^1H -NMR(CDCl_3) δ : 1.08(1H, m), 1.20-1.32(2H, m), 1.40-1.50(2H, m),
1.56-1.80(4H, m), 2.00-2.20(5H, m), 2.36(2H, t, $J=7.2\text{Hz}$), 2.54(1H, m), 3.84(1H, m),
5.20(2H, s), 5.31-5.44(2H, m), 6.06(1H, d, $J=7.5\text{Hz}$), 6.94-7.05(4H, m),

7.27-7.33(2H, m), 7.42(1H, d, J=3.9Hz).

IR(CHCl₃): 3516, 3444, 3427, 2669, 1709, 1645, 1599, 1545, 1508, 1497 cm⁻¹.

[α]_D²⁴+65.4 \pm 1.1° (c=1.003, MeOH)

Elemental Analysis (C₂₆H₃₁NO₄S·0.2H₂O)

5 Calcd.(%): C, 68.30; H, 6.92; N, 3.06; S, 7.01

Found(%): C, 68.32; H, 6.83; N, 3.08; S, 6.99

Compound I-124

300MHz ¹H-NMR(CDCl₃) δ : 1.06(1H, m), 1.18-1.32(2H, m), 1.40-1.50(2H, m),
1.55-1.80(4H, m), 2.00-2.20(5H, m), 2.35(2H, t, J=7.2Hz), 2.52(1H, m), 3.81(1H,
10 m), 4.51(2H, d, J=0.9Hz), 5.30-5.43(2H, m), 6.01(1H, d, J=7.5Hz), 6.65-6.97(3H,
m), 6.96(1H, d, J=3.9Hz), 7.16-7.21(1H, m), 7.41(1H, d, J=3.9Hz).

IR(CHCl₃): 3516, 3444, 3427, 1709, 1643, 1603, 1545, 1504, 1309, 1260 cm⁻¹.

[α]_D²²+65.7 \pm 1.0° (c=1.014, MeOH)

Elemental Analysis (C₂₆H₃₂N₂O₃S·0.2H₂O)

15 Calcd.(%): C, 68.45; H, 7.16; N, 6.14; S, 7.03

Found(%): C, 68.43; H, 7.18; N, 6.27; S, 6.94

Compound I-125

300MHz ¹H-NMR(CDCl₃) δ : 1.05(1H, m), 1.18-1.27(2H, m), 1.40-1.45(2H, m),
1.56-1.77(4H, m), 2.00-2.13(5H, m), 2.28(3H, s), 2.34(2H, t, J=7.5Hz), 2.51(1H,
20 m), 3.80(1H, m), 4.12(2H, s), 5.29-5.41(2H, m), 5.98(1H, d, J=7.2Hz), 6.69(1H,
d, J=3.6Hz), 7.18(4H, s), 7.36(1H, d, J=3.6Hz).

IR(CHCl₃): 3518, 3446, 3426, 1741, 1709, 1641, 1543, 1506, 1458 cm⁻¹.

[α]_D^{22.5}+66.8 \pm 1.1° (c=1.003, MeOH)

Elemental Analysis (C₂₇H₃₃NO₃S·H₂O)

25 Calcd.(%): C, 69.05; H, 7.51; N, 2.98; S, 6.83

Found(%): C, 69.07; H, 7.11; N, 3.23; S, 7.04

Compound I-126

300MHz ^1H -NMR(CDCl_3) δ : 1.04(1H, m), 1.17-1.28(2H, m), 1.41-1.46(2H, m), 1.55-1.77(4H, m), 2.00-2.20(5H, m), 2.34(2H, t, $J=7.2\text{Hz}$), 2.51(1H, m), 3.80(1H, m), 4.12(2H, s), 5.29-5.41(2H, m), 5.91(1H, d, $J=7.2\text{Hz}$), 6.77(1H, d, $J=3.3\text{Hz}$), 6.86-6.90(2H, m), 7.15(1H, dd, $J=1.8$ and 7.5Hz), 7.20-7.26(1H, m), 7.34(1H, d, $J=3.6\text{Hz}$).

IR(CHCl_3): 3519, 3446, 3427, 2669, 1741, 1709, 1641, 1543, 1504, 1458, 1248 cm^{-1} .

$[\alpha]_{\text{D}}^{22.5} +64.2 \pm 1.0^\circ$ ($c=1.005$, MeOH)

Elemental Analysis ($\text{C}_{27}\text{H}_{33}\text{NO}_4\text{S} \cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 69.08; H, 7.13; N, 2.98; S, 6.83

Found(%): C, 68.97; H, 6.90; N, 3.09; S, 6.77

Compound I-127

300MHz ^1H -NMR(CDCl_3) δ : 1.04(1H, m), 1.18(3H, t, $J=7.7\text{Hz}$), 1.15-1.29(2H, m), 1.41-1.46(2H, m), 1.56-1.80(4H, m), 2.00-2.15(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.51(1H, s), 2.64(2H, q, $J=7.7\text{Hz}$), 3.80(1H, m), 4.16(2H, s), 5.29-5.41(2H, m), 5.91(1H, d, $J=7.5\text{Hz}$), 6.69(1H, d, $J=3.6\text{Hz}$), 7.16-7.25(4H, m), 7.35(1H, d, $J=3.6\text{Hz}$).

IR(CHCl_3): 3516, 3447, 3427, 2669, 1709, 1641, 1543, 1506, 1456 cm^{-1} .

$[\alpha]_{\text{D}}^{21} +65.8 \pm 1.1^\circ$ ($c=1.011$, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{35}\text{NO}_3\text{S} \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 71.67; H, 7.60; N, 2.98; S, 6.83

Found(%): C, 71.83; H, 7.49; N, 3.12; S, 6.89

Compound I-128

300MHz ^1H -NMR(CDCl_3) δ : 1.04(1H, m), 1.18-1.29(2H, m), 1.41-1.46(2H, m), 1.56-1.80(4H, m), 2.00-2.20(5H, m), 2.24 and 2.31(each 3H, each s), 2.35(2H, t, $J=7.4\text{Hz}$), 2.51(1H, s), 3.80(1H, m), 4.19(2H, s), 5.29-5.41(2H, m), 5.91(1H, d, $J=7.2\text{Hz}$), 6.70(1H, d, $J=3.6\text{Hz}$), 6.99(1H, d, $J=7.5\text{Hz}$), 7.00(1H, s), 7.07(1H, d,

$J=7.5\text{Hz}$), 7.35(1H, d, $J=3.6\text{Hz}$).

IR(CHCl_3): 3514, 3446, 3426, 1741, 1709, 1641, 1543, 1506, 1456 cm^{-1} .

$[\alpha]_{\text{D}}^{21}+65.2\pm 1.0^\circ$ ($c=1.014$, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{35}\text{NO}_3\text{S}\cdot 0.2\text{H}_2\text{O}$)

5 Calcd.(%): C, 71.67; H, 7.60; N, 2.98; S, 6.83

Found(%): C, 71.53; H, 7.49; N, 3.31; S, 6.90

Compound I-129

300MHz ^1H -NMR(CDCl_3) δ : 1.05(1H, m), 1.18-1.29(2H, m), 1.42-1.47(2H, m),
1.56-1.78(4H, m), 2.00-2.20(5H, m), 2.35(2H, t, $J=7.5\text{Hz}$), 2.43(3H, s), 2.52(1H,
10 s), 3.81(1H, m), 4.24(2H, s), 5.30-5.42(2H, m), 5.97(1H, d, $J=7.5\text{Hz}$), 6.57(1H,
m), 6.67(1H, d, $J=3.3\text{Hz}$), 6.83(1H, d, $J=3.9\text{Hz}$), 7.37(1H, d, $J=3.9\text{Hz}$).

IR(CHCl_3): 3514, 3446, 3427, 1709, 1643, 1545, 1506, 1456 cm^{-1} .

$[\alpha]_{\text{D}}^{22}+67.1\pm 1.1^\circ$ ($c=1.002$, MeOH)

Elemental Analysis ($\text{C}_{25}\text{H}_{31}\text{NO}_3\text{S}_2$)

15 Calcd.(%): C, 65.61; H, 6.83; N, 3.06; S, 14.01

Found(%): C, 65.42; H, 6.76; N, 3.20; S, 13.73

Compound I-130

300MHz ^1H -NMR(CDCl_3) δ : 1.04(1H, m), 1.18-1.28(2H, m), 1.41-1.45(2H, m),
1.55-1.78(4H, m), 1.99-2.16(5H, m), 2.34(2H, t, $J=7.2\text{Hz}$), 2.38(3H, s), 2.51(1H,
20 m), 3.80(1H, m), 4.09(2H, s), 5.29-5.41(2H, m), 5.96(1H, d, $J=6.9\text{Hz}$), 6.76(1H,
d, $J=3.6\text{Hz}$), 7.12(4H, s), 7.37(1H, d, $J=3.6\text{Hz}$).

IR(CHCl_3): 3510, 3446, 3427, 1741, 1709, 1641, 1543, 1508, 1458 cm^{-1} .

$[\alpha]_{\text{D}}^{22}+67.0\pm 1.1^\circ$ ($c=1.014$, MeOH)

Elemental Analysis ($\text{C}_{27}\text{H}_{33}\text{NO}_3\text{S}$)

25 Calcd.(%): C, 71.81; H, 7.36; N, 3.10; S, 7.10

Found(%): C, 71.53; H, 7.24; N, 3.21; S, 7.36

Compound I-131

300MHz ^1H -NMR(CDCl_3) δ : 1.04(1H, m), 1.18-1.28(2H, m), 1.41-1.46(2H, m), 1.56-1.78(4H, m), 1.99-2.19(5H, m), 2.33(3H, s), 2.34(2H, t, $J=7.5\text{Hz}$), 2.51(1H, m), 3.81(1H, m), 4.09(2H, s), 5.29-5.42(2H, m), 5.96(1H, d, $J=7.2\text{Hz}$), 6.77(1H, d, $J=3.6\text{Hz}$), 7.02-7.07(3H, m), 7.21(1H, m), 7.37(1H, d, $J=3.6\text{Hz}$).

5 IR(CHCl_3): 3516, 3446, 3427, 1741, 1709, 1641, 1543, 1506, 1458 cm^{-1} .

$[\alpha]_{\text{D}}^{25} +66.1 \pm 1.1^\circ$ ($c=1.006$, MeOH)

Elemental Analysis ($\text{C}_{27}\text{H}_{33}\text{NO}_3\text{S} \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 71.24; H, 7.40; N, 3.08; S, 7.04

Found(%): C, 71.26; H, 7.20; N, 3.19; S, 7.12

10 Compound I-132

300MHz ^1H -NMR(CDCl_3) δ : 1.06(1H, m), 1.19-1.30(2H, m), 1.41-1.49(2H, m), 1.57-1.78(4H, m), 2.00-2.21(5H, m), 2.30(3H, s), 2.35(2H, t, $J=7.2\text{Hz}$), 2.52(1H, m), 3.81(1H, m), 4.25(2H, s), 5.30-5.43(2H, m), 6.01(1H, d, $J=6.9\text{Hz}$), 6.82(1H, d, $J=3.9\text{Hz}$), 7.02(1H, m), 7.10-7.19(3H, m), 7.31(1H, d, $J=3.9\text{Hz}$).

15 IR(CHCl_3): 3516, 3446, 3427, 2671, 1739, 1709, 1643, 1543, 1506, 1475, 1456 cm^{-1} .

$[\alpha]_{\text{D}}^{25} +63.2 \pm 1.0^\circ$ ($c=1.007$, MeOH)

Elemental Analysis ($\text{C}_{27}\text{H}_{33}\text{NO}_3\text{S}_2 \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 66.55; H, 6.91; N, 2.87; S, 13.16

20 Found(%): C, 66.44; H, 6.87; N, 2.99; S, 13.11

Compound I-133

300MHz ^1H -NMR(CDCl_3) δ : 1.07(1H, m), 1.20-1.30(2H, m), 1.45-1.51(2H, m), 1.56-1.82(4H, m), 2.00-2.20(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.52(1H, m), 3.82(1H, m), 4.16(2H, s), 5.30-5.43(2H, m), 5.98(1H, d, $J=7.2\text{Hz}$), 6.13(1H, dd, $J=3.3$ and 0.9Hz), 6.32(1H, dd, $J=3.3$ and 1.8Hz), 6.84(1H, d, $J=3.6\text{Hz}$), 7.35(1H, dd, $J=1.8$ and 0.9Hz), 7.37(1H, d, $J=3.6\text{Hz}$).

IR(CHCl_3): 3512, 3446, 3427, 2669, 1709, 1643, 1545, 1506 cm^{-1} .

$[\alpha]_D^{22} + 69.6 \pm 1.1^\circ$ ($c=1.015$, MeOH)

Elemental Analysis ($C_{24}H_{29}NO_4S \cdot 0.2H_2O$)

Calcd.(%): C, 66.86; H, 6.87; N, 3.25; S, 7.44

Found(%): C, 66.75; H, 6.63; N, 3.32; S, 7.50

5 Compound I-134

300MHz 1H -NMR($CDCl_3$) δ : 1.07(1H, m), 1.19-1.29(2H, m), 1.45-1.60(2H, m), 1.61-1.80(4H, m), 2.00-2.21(5H, m), 2.36(2H, t, $J=7.2$ Hz), 2.52(1H, m), 3.81(1H, m), 3.96(2H, s), 5.29-5.42(2H, m), 5.96(1H, d, $J=6.9$ Hz), 6.30(1H, m), 6.80(1H, m), 7.32(1H, m), 7.35-7.39(2H, m).

10 IR($CHCl_3$): 3516, 3446, 3427, 2663, 1709, 1643, 1545, 1506 cm^{-1} .

$[\alpha]_D^{21} + 70.2 \pm 1.1^\circ$ ($c=1.007$, MeOH)

Elemental Analysis ($C_{24}H_{29}NO_4S$)

Calcd.(%): C, 67.42; H, 6.84; N, 3.28; S, 7.50

Found(%): C, 67.13; H, 6.57; N, 3.40; S, 7.40

15 Compound I-135

300MHz 1H -NMR($CDCl_3$) δ : 1.06(1H, m), 1.20-1.29(2H, m), 1.42-1.47(2H, m), 1.58-1.82(4H, m), 2.00-2.15(5H, m), 2.35(2H, t, $J=7.2$ Hz), 2.52(1H, m), 3.81(1H, m), 4.41(2H, s), 5.29-5.41(2H, m), 5.96(1H, d, $J=7.2$ Hz), 6.91(1H, d, $J=3.6$ Hz), 7.11(1H, s), 7.25-7.35(3H, m), 7.39(1H, d, $J=3.6$ Hz), 7.76(1H, d, $J=7.8$ Hz).

20 IR($CHCl_3$): 3510, 3444, 3427, 2667, 1709, 1643, 1543, 1508 cm^{-1} .

$[\alpha]_D^{24} + 66.5 \pm 1.1^\circ$ ($c=1.012$, MeOH)

Elemental Analysis ($C_{28}H_{31}NO_3S_2 \cdot 0.5H_2O$)

Calcd.(%): C, 66.90; H, 6.42; N, 2.79; S, 12.76

Found(%): C, 66.99; H, 6.12; N, 2.81; S, 12.48

25 Compound I-136

300MHz 1H -NMR($CDCl_3$) δ : 1.07(1H, m), 1.20-1.42(2H, m), 1.44-1.49(2H, m), 1.55-1.80(4H, m), 2.00-2.20(5H, m), 2.35(2H, t, $J=7.2$ Hz), 2.52(1H, m), 3.81(1H,

m), 4.30(2H, s), 5.29-5.41(2H, m), 5.98(1H, d, $J=7.8\text{Hz}$), 6.51(1H, d, $J=0.6\text{Hz}$), 6.92(1H, d, $J=3.9\text{Hz}$), 7.17-7.25(2H, m), 7.38-7.51(3H, m).

IR(CHCl_3): 3514, 3444, 3427, 2669, 1709, 1643, 1545, 1508, 1454 cm^{-1} .

$[\alpha]_{\text{D}^{23}+63.8 \pm 1.0^\circ}$ ($c=1.004$, MeOH)

5 Elemental Analysis ($\text{C}_{28}\text{H}_{31}\text{NO}_4\text{S} \cdot 0.3\text{H}_2\text{O}$)

Calcd.(%): C, 69.62; H, 6.59; N, 2.90; S, 6.64

Found(%): C, 69.51; H, 6.52; N, 2.92; S, 6.63

Compound I-137

300MHz ^1H -NMR(CDCl_3) δ : 1.05(1H, m), 1.18-1.29(2H, m), 1.40-1.48(2H, m),

10 1.55-1.78(4H, m), 1.98-2.18(5H, m), 2.34(2H, t, $J=7.2\text{Hz}$), 2.51(1H, m), 3.81(1H, m), 4.17(2H, s), 5.29-5.42(2H, m), 5.98(1H, d, $J=7.5\text{Hz}$), 6.81(1H, d, $J=3.6\text{Hz}$), 7.29-7.46(6H, m), 7.52-7.60(4H, m).

IR(CHCl_3): 3510, 3446, 3427, 1741, 1709, 1643, 1543, 1506, 1489 cm^{-1} .

$[\alpha]_{\text{D}^{23}+59.4 \pm 1.0^\circ}$ ($c=1.007$, MeOH)

15 Elemental Analysis ($\text{C}_{32}\text{H}_{35}\text{NO}_5\text{S} \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 74.30; H, 6.90; N, 2.71; S, 6.20

Found(%): C, 74.24; H, 6.78; N, 2.97; S, 6.16

Compound I-138

300MHz ^1H -NMR(CDCl_3) δ : 1.04(1H, m), 1.17-1.29(2H, m), 1.39-1.47(2H, m),

20 1.54-1.76(4H, m), 1.97-2.38(5H, m), 2.33(2H, t, $J=7.5\text{Hz}$), 2.51(1H, m), 3.80(1H, m), 4.19(2H, s), 5.28-5.41(2H, m), 5.98(1H, d, $J=7.5\text{Hz}$), 6.79(1H, d, $J=3.6\text{Hz}$), 7.21(1H, d, $J=7.8\text{Hz}$), 7.31-7.49(7H, m), 7.56(2H, m).

IR(CHCl_3): 3512, 3446, 3427, 2669, 1741, 1709, 1643, 1543, 1506, 1479, 1456 cm^{-1} .

25 $[\alpha]_{\text{D}^{24}+59.2 \pm 1.0^\circ}$ ($c=1.006$, MeOH)

Elemental Analysis ($\text{C}_{32}\text{H}_{35}\text{NO}_5\text{S} \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 74.30; H, 6.90; N, 2.71; S, 6.20

Found(%): C, 74.26; H, 6.92; N, 3.00; S, 6.20

Compound I-139

300MHz ^1H -NMR(CDCl_3) δ : 1.05(1H, m), 1.17-1.32(2H, m), 1.43-1.48(2H, m),
1.58-1.80(4H, m), 2.02-2.24(5H, m), 2.34(2H, t, $J=7.2\text{Hz}$), 2.58(1H, s), 3.91(1H,
5 m), 4.11(2H, s), 5.30-5.44(2H, m), 6.11(1H, d, $J=7.2\text{Hz}$), 7.18-7.30(6H, m),
7.75(1H, d, $J=8.4\text{Hz}$), 7.86(1H, s), 8.16(1H, s).

IR(CHCl_3): 3516, 3430, 2665, 1741, 1709, 1651, 1513, 1494, 1454, 1435 cm^{-1} .

$[\alpha]_{\text{D}^{24}}+45.6\pm 0.9^\circ$ ($c=1.004$, MeOH)

Elemental Analysis ($\text{C}_{30}\text{H}_{33}\text{NO}_3\text{S}\cdot 0.1\text{H}_2\text{O}$)

10 Calcd.(%): C, 73.62; H, 6.84; N, 2.86; S, 6.55

Found(%): C, 73.57; H, 6.71; N, 3.07; S, 6.30

Compound I-140

300MHz ^1H -NMR(CDCl_3) δ : 1.09(1H, m), 1.20-1.32(2H, m), 1.46-1.51(2H, m),
1.58-1.78(4H, m), 2.02-2.24(5H, m), 2.35(2H, t, $J=7.4\text{Hz}$), 2.60(1H, s), 3.92(1H,
15 m), 4.10(2H, s), 5.32-5.46(2H, m), 6.14(1H, d, $J=7.2\text{Hz}$), 7.19-7.32(6H, m),
7.64(1H, s), 7.81(1H, s), 8.20(1H, d, $J=8.4\text{Hz}$).

IR(CHCl_3): 3516, 3438, 2669, 1709, 1651, 1516, 1494, 1406 cm^{-1} .

$[\alpha]_{\text{D}^{24}}+53.0\pm 0.9^\circ$ ($c=1.002$, MeOH)

Elemental Analysis ($\text{C}_{30}\text{H}_{33}\text{NO}_3\text{S}$)

20 Calcd.(%): C, 73.89; H, 6.82; N, 2.87; S, 6.58

Found(%): C, 73.57; H, 7.05; N, 3.08; S, 6.63

Compound I-141

mp. 54-56°C

300MHz ^1H -NMR(CDCl_3) δ : 0.97(1H, m), 1.10-1.43(4H, m), 1.53-1.72(4H, m),
25 1.97-2.15(5H, m), 2.31(2H, t, $J=7.4\text{Hz}$), 2.45(1H, s), 3.83(1H, m), 4.39 and
4.52(each 1H, each d, $J=16.5\text{Hz}$), 5.25-5.40(2H, m), 5.98(1H, d, $J=7.5\text{Hz}$),
7.00-7.31(7H, m), 7.57(1H, s), 7.73(1H, d, $J=7.5\text{Hz}$).

IR(CHCl₃): 3514, 3433, 2671, 1709, 1655, 1512, 1454 cm⁻¹.

$[\alpha]_D^{25} + 76.7 \pm 1.2^\circ$ (c=1.005, MeOH)

Elemental Analysis (C₃₀H₃₃NO₃S·0.1H₂O)

Calcd.(%): C, 73.62; H, 6.84; N, 2.86; S, 6.55

5 Found(%): C, 73.45; H, 6.91; N, 3.21; S, 6.34

Compound I-142

mp.118-119°C

300MHz ¹H-NMR(CDCl₃) δ: 1.07(1H, m), 1.20-1.27(2H, m), 1.42-1.46(2H, m),
1.55-1.73(4H, m), 1.99-2.12(5H, m), 2.33(2H, t, J=7.5Hz), 2.52(1H, s), 3.82(1H,
10 m), 3.93(2H, s), 5.29-5.42(2H, m), 6.10(1H, d, J=7.2Hz), 7.05(1H, d, J=0.9Hz),
7.16-7.32(6H, m).

IR(CHCl₃): 3516, 3444, 3429, 2669, 1739, 1709, 1665, 1549, 1508, 1454 cm⁻¹.

$[\alpha]_D^{24} + 72.7 \pm 0.1.1^\circ$ (c=1.001, MeOH)

Elemental Analysis (C₂₈H₃₁NO₃S)

15 Calcd.(%): C, 71.36; H, 7.14; N, 3.20; S, 7.33

Found(%): C, 71.31; H, 7.27; N, 3.36; S, 7.31

Compound I-143

300MHz ¹H-NMR(CDCl₃) δ: 1.09(1H, m), 1.19-1.32(2H, m), 1.46-1.51(2H, m),
1.58-1.78(4H, m), 2.02-2.24(5H, m), 2.35(2H, t, J=7.2Hz), 2.60(1H, s), 3.92(1H,
20 m), 4.24(2H, s), 5.32-5.47(2H, m), 6.14(1H, d, J=7.5Hz), 7.18-7.30(6H, m),
7.43(1H, t, J=7.8Hz), 7.83(1H, s), 8.17(1H, d, J=7.8Hz).

IR(CHCl₃): 3516, 3438, 2671, 1709, 1651, 1518, 1495, 1454 cm⁻¹.

$[\alpha]_D^{25} + 62.8 \pm 1.0^\circ$ (c=1.011, MeOH)

Elemental Analysis (C₃₀H₃₃NO₃S·0.1H₂O)

25 Calcd.(%): C, 73.62; H, 6.84; N, 2.86; S, 6.55

Found(%): C, 73.52; H, 6.87; N, 3.13; S, 6.47

Compound I-144

300MHz $^1\text{H-NMR}(\text{CDCl}_3)$ δ : 1.05(1H, m), 1.23-1.29(2H, m), 1.41-1.49(2H, m), 1.58-1.77(4H, m), 2.00-2.21(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.52(1H, m), 3.81(1H, m), 4.05(2H, s), 5.12(2H, s), 5.29-5.42(2H, m), 5.94(1H, d, $J=7.8\text{Hz}$), 6.76(1H, d, $J=3.9\text{Hz}$), 6.90-6.98(3H, m), 7.32-7.45(6H, m).

5 IR(CHCl_3): 3516, 3446, 3427, 1741, 1709, 1643, 1543, 1510, 1456, 1273 cm^{-1} .

$[\alpha]_{\text{D}^{25}}+53.7\pm0.9^\circ$ ($c=1.006$, MeOH)

Elemental Analysis ($\text{C}_{33}\text{H}_{38}\text{FNO}_4\text{S}\cdot0.2\text{H}_2\text{O}$)

Calcd.(%): C, 70.11; H, 6.49; N, 2.48; S, 5.67; F, 3.36

Found(%): C, 70.00; H, 6.44; N, 2.50; S, 5.75; F, 3.32

10 Compound I-145

mp.136-137°C

300MHz $^1\text{H-NMR}(\text{CDCl}_3)$ δ : 1.06(1H, m), 1.23-1.29(2H, m), 1.41-1.49(2H, m), 1.58-1.77(4H, m), 2.00-2.21(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.52(1H, m), 3.78(1H, m), 4.05(2H, s), 5.29-5.42(2H, m), 5.93(1H, d, $J=10.8\text{Hz}$), 6.77(1H, d, $J=3.6\text{Hz}$), 6.88-6.98(3H, m), 7.36(1H, d, $J=3.6\text{Hz}$).

15 IR(Nujol): 3377, 3101, 2752, 1703, 1618, 1601, 1550, 1518 cm^{-1} .

$[\alpha]_{\text{D}^{25}}+64.2\pm1.0^\circ$ ($c=1.009$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{30}\text{FNO}_4\text{S}$)

Calcd.(%): C, 66.23; H, 6.41; N, 2.97; S, 6.80; F, 4.03

20 Found(%): C, 66.15; H, 6.38; N, 2.94; S, 6.76; F, 3.94

Compound I-146

300MHz $^1\text{H-NMR}(\text{CDCl}_3)$ δ : 1.06(1H, m), 1.20-1.29(2H, m), 1.41-1.46(2H, m), 1.61-1.81(4H, m), 2.00-2.16(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.51(1H, m), 3.79(1H, m), 4.03(2H, s), 5.08(2H, s), 5.29-5.40(2H, m), 5.63(1H, brs), 5.93(1H, d, $J=7.5\text{Hz}$), 6.70(1H, dd, $J=2.1$ and 8.4Hz), 6.77(1H, d, $J=3.9\text{Hz}$), 6.83(1H, d, $J=5.7\text{Hz}$), 6.86(1H, d, $J=8.4\text{Hz}$), 7.36-7.41(6H, m).

25 IR(CHCl_3): 3539, 3446, 3425, 1741, 1709, 1641, 1543, 1508, 1475, 1273 cm^{-1} .

$[\alpha]_D^{25} + 53.8 \pm 0.9^\circ$ ($c = 1.003$, MeOH)

Elemental Analysis ($C_{33}H_{37}NO_5S \cdot 0.5H_2O$)

Calcd.(%): C, 69.69; H, 6.73; N, 2.46; S, 5.64

Found(%): C, 69.68; H, 6.85; N, 2.68; S, 5.76

5 Compound I-147

mp.150-151°C

300MHz 1H -NMR($CDCl_3$) δ : 1.06(1H, m), 1.20-1.29(2H, m), 1.41-1.46(2H, m), 1.58-1.79(4H, m), 2.00-2.16(5H, m), 2.35(2H, t, $J = 7.2$ Hz), 2.51(1H, m), 3.79(1H, m), 3.86(3H, s), 4.06(2H, s), 5.29-5.41(2H, m), 5.56(1H, brs), 5.93(1H, d, $J = 8.4$ Hz), 6.72-6.77(3H, m), 6.87(1H, d, $J = 8.1$ Hz), 7.37(1H, d, $J = 3.6$ Hz).

IR(Nujol): 3452, 3361, 3130, 1743, 1707, 1620, 1599, 1550, 1522, 1286 cm^{-1} .

$[\alpha]_D^{25} + 62.6 \pm 1.0^\circ$ ($c = 1.002$, MeOH)

Elemental Analysis ($C_{27}H_{33}NO_5S$)

Calcd.(%): C, 67.05; H, 6.88; N, 2.90; S, 6.63

15 Found(%): C, 67.20; H, 7.04; N, 2.98; S, 6.58

Compound I-148

300MHz 1H -NMR($CDCl_3$) δ : 1.07(1H, m), 1.19-1.31(2H, m), 1.41-1.50(2H, m), 1.56-1.81(4H, m), 1.99-2.21(5H, m), 2.35(2H, t, $J = 7.2$ Hz), 2.53(1H, m), 2.95-3.00(2H, m), 3.10-3.15(2H, m), 3.83(1H, m), 5.31-5.44(2H, m), 6.02(1H, d, $J = 7.2$ Hz), 6.70(1H, d, $J = 3.9$ Hz), 7.15-7.32(5H, m), 7.33(1H, d, $J = 3.9$ Hz).

20 IR($CHCl_3$): 3510, 3446, 3429, 2671, 1741, 1709, 1641, 1543, 1506, 1456 cm^{-1} .

$[\alpha]_D^{25} + 68.4 \pm 1.1^\circ$ ($c = 1.004$, MeOH)

Elemental Analysis ($C_{27}H_{33}NO_5S \cdot 0.1H_2O$)

Calcd.(%): C, 71.52; H, 7.38; N, 3.09; S, 7.07

25 Found(%): C, 71.35; H, 7.37; N, 3.19; S, 7.19

Compound I-149

300MHz 1H -NMR($CDCl_3$) δ : 1.07(1H, m), 1.19-1.32(2H, m), 1.41-1.50(2H, m),

1.56-1.81(4H, m), 1.99-2.23(5H, m), 2.36(2H, t, $J=7.2\text{Hz}$), 2.43(3H, s), 2.53(1H, m), 3.05-3.19(4H, m), 3.83(1H, m), 5.31-5.44(2H, m), 6.00(1H, d, $J=6.9\text{Hz}$), 6.23-6.56(2H, m), 6.75 and 7.34(each 1H, each d, each $J=3.6\text{Hz}$).

IR(CHCl₃): 3510, 3446, 3429, 2669, 1709, 1641, 1543, 1506, 1458 cm⁻¹.

5 $[\alpha]_D^{23}+64.6\pm 1.0^\circ$ ($c=1.014$, MeOH)

Elemental Analysis (C₂₆H₃₃NO₅S₂·0.1H₂O)

Calcd.(%): C, 65.96; H, 7.07; N, 2.96; S, 13.54

Found(%): C, 65.87; H, 7.03; N, 3.02; S, 13.50

Compound I-150

10 300MHz ¹H-NMR(CDCl₃) δ : 1.07(1H, m), 1.19-1.31(2H, m), 1.41-1.50(2H, m), 1.56-1.80(4H, m), 1.99-2.20(5H, m), 2.35(2H, t, $J=7.5\text{Hz}$), 2.53(1H, m), 3.18(3H, s), 3.83(1H, m), 5.31-5.44(2H, m), 6.05(1H, d, $J=7.2\text{Hz}$), 6.74(1H, d, $J=3.6\text{Hz}$), 6.79(1H, m), 6.91(1H, dd, $J=3.6$ and 5.4Hz), 7.13(1H, dd, $J=1.2$ and 5.4Hz), 7.34(1H, d, $J=3.6\text{Hz}$).

15 IR(CHCl₃): 3516, 3446, 3429, 2669, 1709, 1641, 1543, 1506 cm⁻¹.

$[\alpha]_D^{24}+66.1\pm 1.0^\circ$ ($c=1.019$, MeOH)

Elemental Analysis (C₂₅H₃₁NO₅S₂)

Calcd.(%): C, 65.61; H, 6.83; N, 3.06; S, 14.01

Found(%): C, 65.47; H, 6.89; N, 3.12; S, 13.82

20 Compound I-151

300MHz ¹H-NMR(CDCl₃) δ : 1.09(1H, m), 1.20-1.32(2H, m), 1.42-1.51(2H, m), 1.57-1.81(4H, m), 2.00-2.22(5H, m), 2.33(2H, t, $J=7.5\text{Hz}$), 2.56(1H, m), 2.99-3.05(2H, m), 3.11-3.17(2H, m), 3.88(1H, m), 5.30-5.44(2H, m), 6.22(1H, d, $J=7.2\text{Hz}$), 6.74(1H, m), 6.89(1H, dd, $J=3.3$ and 5.1Hz), 7.11(1H, dd, $J=1.2$ and 5.1Hz), 7.23 and 7.67(each 2H, each d, each $J=8.1\text{Hz}$).

25 IR(CHCl₃): 3516, 3448, 2665, 1709, 1651, 1523, 1496 cm⁻¹.

$[\alpha]_D^{24}+71.8\pm 1.1^\circ$ ($c=1.009$, MeOH)

Elemental Analysis ($C_{27}H_{33}NO_3S$)

Calcd.(%): C, 71.81; H, 7.37; N, 3.10; S, 7.10

Found(%): C, 71.68; H, 7.40; N, 3.18; S, 6.96

Compound I-152

5 300MHz 1H -NMR($CDCl_3$) δ : 1.07(1H, m), 1.19-1.31(2H, m), 1.42-1.50(2H, m), 1.56-1.81(4H, m), 2.00-2.21(5H, m), 2.36(2H, t, $J=7.2$ Hz), 2.53(1H, m), 2.92-2.97(2H, m), 3.07-3.12(2H, m), 3.83(1H, m), 5.31-5.44(2H, m), 5.99(1H, d, $J=7.2$ Hz), 6.68(1H, d, $J=3.6$ Hz), 6.92-7.00(2H, m), 7.08-7.15(2H, m), 7.32(1H, d, $J=3.6$ Hz).

10 IR($CHCl_3$): 3516, 3446, 3429, 1741, 1709, 1641, 1543, 1510, 1458 cm^{-1} .

$[\alpha]_D^{23}+64.1\pm 1.0^\circ$ ($c=1.012$, MeOH)

Elemental Analysis ($C_{27}H_{32}FNO_3S$)

Calcd.(%): C, 69.06; H, 6.87; N, 2.98; S, 6.83; F, 4.05

Found(%): C, 68.92; H, 6.90; N, 3.03; S, 6.81; F, 4.02

15 Compound I-153

300MHz 1H -NMR($CDCl_3$) δ : 1.05(1H, m), 1.19-1.29(2H, m), 1.41-1.46(2H, m), 1.56-1.78(4H, m), 2.00-2.19(5H, m), 2.29(6H, s), 2.34(2H, t, $J=7.5$ Hz), 2.51(1H, m), 3.81(1H, m), 4.05(2H, s), 5.29-5.42(2H, m), 5.96(1H, d, $J=7.5$ Hz), 6.77(1H, td, $J=0.9$ and 3.6Hz), 6.85(2H, s), 6.88(1H, s), 7.37(1H, d, $J=3.6$ Hz).

20 IR($CHCl_3$): 3516, 3446, 3427, 1739, 1709, 1641, 1606, 1543, 1506, 1458 cm^{-1} .

$[\alpha]_D^{23}+64.6\pm 1.0^\circ$ ($c=1.004$, MeOH)

Elemental Analysis ($C_{28}H_{35}NO_3S \cdot 0.1H_2O$)

Calcd.(%): C, 71.94; H, 7.59; N, 3.00; S, 6.86

Found(%): C, 71.87; H, 7.52; N, 3.31; S, 6.94

25 Compound I-154

300MHz 1H -NMR($CDCl_3$) δ : 1.05(1H, m), 1.18-1.29(2H, m), 1.41-1.46(2H, m), 1.56-1.78(4H, m), 2.00-2.19(5H, m), 2.34(2H, t, $J=7.5$ Hz), 2.51(1H, m), 3.81(1H,

m), 4.10(2H, s), 5.29-5.42(2H, m), 5.98(1H, d, J=7.2Hz), 6.75(1H, td, J=0.9 and 3.9Hz), 6.97-7.03(2H, m), 7.17-7.22(2H, m), 7.36(1H, d, J=3.9Hz).

IR(CHCl₃): 3512, 3446, 3427, 1741, 1709, 1643, 1543, 1508 cm⁻¹.

[α]_D²⁴+66.1±1.1° (c=1.008, MeOH)

5 Elemental Analysis (C₂₆H₃₀FNO₃S)

Calcd.(%): C, 68.54; H, 6.64; N, 3.07; S, 7.04; F, 4.17

Found(%): C, 68.41; H, 6.70; N, 3.19; S, 6.90; F, 3.98

Compound I-155

300MHz ¹H-NMR(CDCl₃) δ : 1.05(1H, m), 1.19-1.29(2H, m), 1.42-1.46(2H, m),

10 1.58-1.78(4H, m), 2.00-2.17(5H, m), 2.35(2H, t, J=7.5Hz), 2.52(1H, m), 3.81(1H, m), 4.19(2H, s), 5.29-5.42(2H, m), 5.97(1H, d, J=7.8Hz), 6.75(1H, td, J=0.9 and 3.6Hz), 7.34-7.37(3H, m), 7.56-7.59(2H, m).

IR(CHCl₃): 3512, 3444, 3427, 1741, 1709, 1643, 1543, 1506, 1325, 1167, 1130, 1066 cm⁻¹.

15 [α]_D²⁴+60.3±1.0° (c=1.001, MeOH)

Elemental Analysis (C₂₇H₃₀F₃NO₃S)

Calcd.(%): C, 64.14; H, 5.98; N, 2.77; S, 6.34; F, 11.27

Found(%): C, 64.16; H, 6.04; N, 3.02; S, 6.19; F, 11.17

Compound I-156

20 mp.66-70°C

300MHz ¹H-NMR(CDCl₃) δ : 1.11(1H, m), 1.22-1.30(2H, m), 1.43-1.50(2H, m),

1.60-1.78(4H, m), 2.03-2.22(5H, m), 2.36(2H, t, J=7.5Hz), 2.54(1H, m), 3.87(1H, m), 4.08(2H, s), 5.31-5.45(2H, m), 6.21(1H, d, J=7.2Hz), 7.18-7.32(6H, m), 7.60(1H, d, J=0.9Hz), 7.70(1H, d, J=0.6Hz), 7.74(1H, d, J=8.1Hz).

25 IR(KBr): 3338, 1707, 1616, 1556, 1537 cm⁻¹.

[α]_D²³+97.2±1.4° (c=1.016, MeOH)

Elemental Analysis (C₃₀H₃₃NO₃S·0.3H₂O)

Calcd.(%): C, 73.08; H, 6.87; N, 2.84; S, 6.50

Found(%): C, 73.19; H, 7.11; N, 2.98; S, 6.32

Compound I-157

300MHz ¹H-NMR(CDCl₃) δ: 1.03(1H, m), 1.17-1.29(2H, m), 1.38-1.47(2H, m),
5 1.55-1.76(4H, m), 1.97-2.18(5H, m), 2.33(2H, t, J=7.5Hz), 2.50(1H, m), 3.80(1H,
m), 4.29(2H, s), 5.28-5.40(2H, m), 5.94(1H, d, J=7.5Hz), 6.81(1H, d, J=3.9Hz),
7.32-7.39(2H, m), 7.42-7.50(2H, m), 7.69(1H, s), 7.77-7.83(3H, m).

IR(CHCl₃): 3516, 3446, 3427, 2665, 1739, 1709, 1643, 1543, 1506, 1458 cm⁻¹.

[α]_D²³+62.8±1.0° (c=1.005, MeOH)

10 Elemental Analysis (C₃₀H₃₂NO₃S·0.2H₂O)

Calcd.(%): C, 73.35; H, 6.85; N, 2.85; S, 6.53

Found(%): C, 73.36; H, 6.84; N, 3.19; S, 6.55

Compound I-158

300MHz ¹H-NMR(CDCl₃) δ: 1.07(1H, m), 1.20-1.32(2H, m), 1.42-1.50(2H, m),
15 1.57-1.84(4H, m), 2.00-2.23(5H, m), 2.36(2H, t, J=7.5Hz), 2.53(1H, m), 2.95-
3.00(2H, m), 3.06-3.12(2H, m), 3.82(1H, m), 3.83(3H, s), 5.30-5.43(2H, m),
5.95(1H, d, J=6.9Hz), 6.73(1H, d, J=3.6Hz), 6.84-6.89(2H, m), 7.09(1H, dd,
J=1.5 and 7.5Hz), 7.20(1H, dt, J=1.5 and 7.5Hz), 7.34(1H, d, J=3.6Hz).

IR(Nujol): 3367, 3221, 3186, 3091, 3055, 2654, 1711, 1631, 1566, 1541, 1321

20 cm⁻¹.

[α]_D²⁵+61.3±1.0° (c=1.003, MeOH)

Elemental Analysis (C₂₈H₃₅NO₄S)

Calcd.(%): C, 69.82; H, 7.32; N, 2.91; S, 6.66

Found(%): C, 69.93; H, 7.48; N, 3.09; S, 6.54

25 Compound I-159

300MHz ¹H-NMR(CDCl₃) δ: 1.07(1H, m), 1.18-1.30(2H, m), 1.40-1.50(2H, m),
1.54-1.78(4H, m), 1.98-2.21(5H, m), 2.33(2H, t, J=7.2Hz), 2.53(1H, m), 2.94-

3.03(2H, m), 3.06-3.15(2H, m), 3.83(1H, m), 5.29-5.43(2H, m), 6.12(1H, d, J=7.5Hz), 6.72(1H, d, J=3.6Hz), 6.77-6.83(2H, m), 7.04-7.08(2H, m), 7.36(1H, d, J=3.6Hz).

IR(CHCl₃): 3599, 3444, 3425, 3195, 1709, 1635, 1543, 1508, 1456 cm⁻¹.

5 $[\alpha]_D^{25} + 64.8 \pm 1.0^\circ$ (c=1.006, MeOH)

Elemental Analysis (C₂₇H₃₃NO₄S·0.2H₂O)

Calcd.(%): C, 68.82; H, 7.14; N, 2.97; S, 6.80

Found(%): C, 68.81; H, 7.10; N, 3.03; S, 6.88

Compound I-160

10 mp.139-141°C

300MHz ¹H-NMR(CDCl₃) δ: 1.12(1H, m), 1.25-1.31(2H, m), 1.45-1.51(2H, m), 1.60-1.78(4H, m), 2.02-2.22(5H, m), 2.35(2H, t, J=7.5Hz), 2.57(1H, m), 3.87(1H, m), 4.09(2H, s), 5.31-5.45(2H, m), 6.22(1H, d, J=7.2Hz), 7.19-7.33(6H, m), 7.63(1H, m), 7.71(1H, d, J=8.7Hz), 7.73(1H, s).

15 IR(KBr): 3338, 1705, 1616, 1560, 1537 cm⁻¹.

$[\alpha]_D^{25} + 92.1 \pm 1.3^\circ$ (c=1.006, MeOH)

Elemental Analysis (C₃₀H₃₃NO₃S)

Calcd.(%): C, 73.89; H, 6.82; N, 2.87; S, 6.58

Found(%): C, 73.69; H, 6.75; N, 2.91; S, 6.58

20 Compound I-161

300MHz ¹H-NMR(CDCl₃) δ: 1.12(1H, m), 1.25-1.31(2H, m), 1.47-1.51(2H, m), 1.60-1.76(4H, m), 2.03-2.20(5H, m), 2.36(2H, t, J=7.2Hz), 2.57(1H, m), 3.87(1H, m), 4.08(2H, s), 5.31-5.45(2H, m), 6.22(1H, d, J=7.5Hz), 6.90(1H, dd, J=1.2 and 4.8Hz), 6.93(1H, m), 7.25-7.29(2H, m), 7.61 and 7.71(each 1H, each s), 7.75(1H, d, J=8.4Hz).

25

IR(CHCl₃): 3512, 3444, 3423, 2671, 1709, 1649, 1531, 1502 cm⁻¹.

$[\alpha]_D^{25} + 96.1 \pm 1.4^\circ$ (c=1.005, MeOH)

Elemental Analysis ($C_{28}H_{31}NO_3S_2$)

Calcd.(%): C, 68.12; H, 6.33; N, 2.84; S, 12.99

Found(%): C, 67.89; H, 6.32; N, 2.88; S, 12.88

Compound I-162

- 5 300MHz 1H -NMR($CDCl_3$) δ : 1.12(1H, m), 1.24-1.31(2H, m), 1.45-1.51(2H, m), 1.60-1.78(4H, m), 2.03-2.22(5H, m), 2.36(2H, t, $J=7.2$ Hz), 2.57(1H, m), 3.87(1H, m), 4.25(2H, s), 5.31-5.45(2H, m), 6.25(1H, d, $J=7.2$ Hz), 6.81(1H, m), 6.93(1H, dd, $J=3.3$ and 5.4Hz), 7.15(1H, dd, $J=1.5$ and 5.4Hz), 7.31(1H, dd, $J=1.5$ and 8.1Hz), 7.65 and 7.71(each 1H, each s), 7.76(1H, d, $J=8.1$ Hz).

- 10 IR($CHCl_3$): 3516, 3444, 3423, 1741, 1709, 1649, 1531, 1502 cm^{-1} .

$[\alpha]_D^{25} +98.5 \pm 1.4^\circ$ ($c=1.007$, MeOH)

Elemental Analysis ($C_{28}H_{31}NO_3S_2 \cdot 0.1H_2O$)

Calcd.(%): C, 67.87; H, 6.35; N, 2.83; S, 12.94

Found(%): C, 67.83; H, 6.29; N, 3.00; S, 12.99

- 15 Compound I-163

mp. 114-115 $^\circ C$

- 300MHz 1H -NMR($CDCl_3$) δ : 1.09(1H, m), 1.20-1.30(2H, m), 1.40-1.49(2H, m), 1.55-1.77(4H, m), 1.99-2.19(5H, m), 2.34(2H, t, $J=7.2$ Hz), 2.53(1H, m), 3.83(1H, m), 4.12(2H, s), 5.30-5.43(2H, m), 6.14(1H, d, $J=7.5$ Hz), 6.81 and 6.93(each 1H, each m), 7.14-7.17(2H, m), 7.37(1H, d, $J=1.8$ Hz).

IR($CHCl_3$): 3516, 3444, 3428, 2671, 1709, 1645, 1550, 1508, 1435 cm^{-1} .

$[\alpha]_D^{25} +71.6 \pm 1.1^\circ$ ($c=1.002$, MeOH)

Elemental Analysis ($C_{24}H_{29}NO_3S_2 \cdot 0.1H_2O$)

Calcd.(%): C, 64.72; H, 6.61; N, 3.14; S, 14.40

- 25 Found(%): C, 64.50; H, 6.54; N, 3.24; S, 14.45

Compound I-164

300MHz 1H -NMR($CDCl_3$) δ : 1.08(1H, m), 1.20-1.31(2H, m), 1.41-1.49(2H, m),

1.56-1.77(4H, m), 1.99-2.19(5H, m), 2.34(2H, t, J=7.2Hz), 2.53(1H, m), 3.83(1H, m), 3.94(2H, s), 5.30-5.43(2H, m), 6.08(1H, d, J=6.9Hz), 6.91 and 6.95(each 1H, each m), 7.08(1H, d, J=1.5Hz), 7.27(1H, m), 7.34(1H, d, J=1.5Hz).

IR(CHCl₃): 3512, 3444, 3429, 1739, 1709, 1644, 1550, 1508 cm⁻¹.

5 [α]_D²⁵+69.7±1.1° (c=1.000, MeOH)

Elemental Analysis (C₂₄H₂₉NO₃S₂·0.2H₂O)

Calcd.(%): C, 64.45; H, 6.63; N, 3.13; S, 14.34

Found(%): C, 64.37; H, 6.49; N, 3.16; S, 14.41

Compound I-165

10 300MHz ¹H-NMR(CDCl₃) δ: 1.08(1H, m), 1.19-1.31(2H, m), 1.41-1.51(2H, m), 1.55-1.74(4H, m), 1.99-2.16(5H, m), 2.34(2H, t, J=7.2Hz), 2.53(1H, m), 3.73(2H, s), 3.83(1H, m), 5.30-5.42(2H, m), 6.15(1H, d, J=6.6Hz), 6.25, 7.10 and 7.24(each 1H, each s), 7.35-7.38(2H, m).

IR(CHCl₃): 3510, 3444, 3429, 2669, 1709, 1645, 1550, 1508 cm⁻¹.

15 [α]_D²⁵+71.6±1.1° (c=1.008, MeOH)

Elemental Analysis (C₂₄H₂₉NO₄S·0.2H₂O)

Calcd.(%): C, 66.85; H, 6.78; N, 3.25; S, 7.44

Found(%): C, 66.94; H, 6.81; N, 3.26; S, 7.38

Compound I-166

20 300MHz ¹H-NMR(CDCl₃) δ: 1.02(1H, m), 1.15-1.27(2H, m), 1.36-1.45(2H, m), 1.53-1.76(4H, m), 1.96-2.14(5H, m), 2.32(2H, t, J=7.2Hz), 2.49(1H, m), 3.78(1H, m), 4.58(2H, s), 5.27-5.39(2H, m), 5.92(1H, d, J=7.2Hz), 6.73 and 7.32(each 1H, each d, each J=3.9Hz), 7.37-7.51(4H, m), 7.80(1H, d, J=7.5Hz), 7.87 and 7.97(each 1H, each m).

25 IR(CHCl₃): 3516, 3446, 3427, 2669, 1739, 1709, 1641, 1543, 1508, 1458 cm⁻¹.

[α]_D^{25.5}+62.8±1.0° (c=1.012, MeOH)

Elemental Analysis (C₃₀H₃₃NO₃S·0.1H₂O)

Calcd.(%): C, 73.62; H, 6.84; N, 2.86; S, 6.55

Found(%): C, 73.35; H, 6.54; N, 3.06; S, 6.51

Compound I-167

mp.129-130°C

- 5 300MHz ¹H-NMR(CDCl₃) δ: 1.04(1H, m), 1.16-1.28(2H, m), 1.38-1.46(2H, m), 1.54-1.73(4H, m), 1.97-2.15(5H, m), 2.31(2H, t, J=7.2Hz), 2.51(1H, m), 3.81(1H, m), 4.37(2H, s), 5.28-5.41(2H, m), 6.04(1H, d, J=7.5Hz), 6.97(1H, s), 7.30-7.50(5H, m), 7.77(1H, d, J=8.1Hz), 7.86 and 7.94(each 1H, each m).
IR(CHCl₃): 3514, 3444, 3427, 1739, 1709, 1645, 1549, 1508 cm⁻¹.

- 10 [α]_D²⁴+59.4±1.0° (c=1.011, MeOH)

Elemental Analysis (C₃₀H₃₃NO₃S)

Calcd.(%): C, 73.89; H, 6.82; N, 2.87; S, 6.58

Found(%): C, 73.85; H, 6.90; N, 2.85; S, 6.81

Compound I-168

- 15 300MHz ¹H-NMR(CDCl₃) δ: 1.10(1H, m), 1.21-1.33(2H, m), 1.47-1.52(2H, m), 1.59-1.80(4H, m), 2.04-2.27(5H, m), 2.36(2H, t, J=7.5Hz), 2.61(1H, m), 3.93(1H, m), 4.42(2H, s), 5.33-5.47(2H, m), 6.13(1H, d, J=7.5Hz), 6.88(1H, m), 6.92(1H, m), 7.15(1H, dd, J=1.2 and 5.1Hz), 7.28(1H, d, J=7.5Hz), 7.43(1H, d, J=8.1Hz), 7.84(1H, s), 8.20(1H, d, J=8.1Hz).
20 IR(CHCl₃): 3512, 3438, 1709, 1651, 1518, 1495 cm⁻¹.

[α]_D²⁵+61.6±1.0° (c=1.003, MeOH)

Elemental Analysis (C₂₈H₃₁NO₃S₂)

Calcd.(%): C, 68.12; H, 6.33; N, 2.84; S, 12.99

Found(%): C, 67.83; H, 6.28; N, 2.96; S, 12.76

- 25 Compound I-169

300MHz ¹H-NMR(CDCl₃) δ: 1.10(1H, m), 1.22-1.32(2H, m), 1.46-1.51(2H, m), 1.58-1.76(4H, m), 2.02-2.24(5H, m), 2.35(2H, t, J=7.2Hz), 2.60(1H, m), 3.92(1H,

m), 4.23(2H, s), 5.32-5.47(2H, m), 6.18(1H, d, J=8.1Hz), 6.92(1H, dd, J=1.2 and 4.8Hz), 7.01(1H, m), 7.20-7.25(2H, m), 7.41(1H, t, J=8.1Hz), 7.84(1H, s), 8.18(1H, d, J=7.5Hz).

IR(CHCl₃): 3510, 3438, 2667, 1709, 1651, 1518, 1495 cm⁻¹.

5 [α]_D²⁵+61.3±1.0° (c=1.006, MeOH)

Elemental Analysis (C₂₈H₃₁NO₃S₂)

Calcd.(%): C, 68.12; H, 6.33; N, 2.84; S, 12.99

Found(%): C, 67.94; H, 6.30; N, 2.97; S, 12.87

Compound I-170

10 300MHz ¹H-NMR(CDCl₃) δ: 1.10(1H, m), 1.21-1.33(2H, m), 1.47-1.52(2H, m), 1.59-1.79(4H, m), 2.03-2.27(5H, m), 2.36(2H, t, J=7.5Hz), 2.61(1H, m), 3.93(1H, m), 4.03(2H, s), 5.33-5.48(2H, m), 6.15(1H, d, J=7.2Hz), 7.23(1H, d, J=7.2Hz), 7.29(1H, m), 7.35(1H, t, J=1.5Hz), 7.42(1H, t, J=7.8Hz), 7.85(1H, s), 8.18(1H, d, J=7.8Hz).

15 IR(CHCl₃): 3518, 3438, 2663, 1739, 1709, 1651, 1518, 1496 cm⁻¹.

[α]_D²⁵+60.3±1.0° (c=1.002, MeOH)

Elemental Analysis (C₂₈H₃₁NO₄S·0.1H₂O)

Calcd.(%): C, 70.15; H, 6.56; N, 2.92; S, 6.69

Found(%): C, 70.03; H, 6.49; N, 2.92; S, 6.69

20 Compound I-171

300MHz ¹H-NMR(CDCl₃) δ: 1.05(1H, m), 1.18-1.28(2H, m), 1.41-1.46(2H, m), 1.56-1.79(4H, m), 2.00-2.15(5H, m), 2.34(2H, t, J=7.2Hz), 2.45(3H, s), 2.50(1H, m), 3.80(1H, m), 4.25(2H, s), 5.29-5.42(2H, m), 5.95(1H, d, J=7.5Hz), 6.78(1H, d, J=3.6Hz), 7.11-7.27(4H, m), 7.36(1H, d, J=3.6Hz).

25 IR(CHCl₃): 3512, 3446, 3427, 2669, 1739, 1709, 1643, 1543, 1506 cm⁻¹.

[α]_D^{23.5}+62.8±1.0° (c=1.005, MeOH)

Elemental Analysis (C₂₇H₃₃NO₃S₂)

Calcd.(%): C, 67.05; H, 6.88; N, 2.90; S, 13.26

Found(%): C, 66.94; H, 7.05; N, 3.00; S, 13.14

Compound I-172

300MHz ^1H -NMR(CDCl_3) δ : 1.07(1H, m), 1.19-1.29(2H, m), 1.41-1.46(2H, m),
5 1.57-1.78(4H, m), 2.01-2.19(5H, m), 2.34(2H, t, $J=7.5\text{Hz}$), 2.51(1H, m), 2.90(3H, s), 3.80(1H, m), 4.68(2H, s), 5.29-5.43(2H, m), 6.02(1H, d, $J=7.5\text{Hz}$), 6.84(1H, td, $J=0.9$ and 3.9Hz), 7.37(1H, d, $J=3.9\text{Hz}$), 7.42-7.51(2H, m), 7.62(1H, dt, $J=1.5$ and 7.5Hz), 8.08(1H, dd, $J=1.5$ and 7.5Hz).

IR(CHCl_3): 3518, 3444, 3427, 1709, 1643, 1543, 1508, 1311, 1153 cm^{-1} .

10 $[\alpha]_{\text{D}}^{25} +59.3 \pm 1.0^\circ$ ($c=1.007$, MeOH)

Elemental Analysis ($\text{C}_{27}\text{H}_{33}\text{NO}_6\text{S}_2 \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 62.45; H, 6.48; N, 2.70; S, 12.35

Found(%): C, 62.47; H, 6.60; N, 2.73; S, 12.36

Compound I-173

15 300MHz ^1H -NMR(CDCl_3) δ : 1.13(1H, m), 1.23-1.36(2H, m), 1.43-1.80(6H, m), 2.03-2.24(5H, m), 2.36(2H, t, $J=7.2\text{Hz}$), 2.60(1H, m), 3.91(1H, m), 3.93(2H, s), 5.31-5.46(2H, m), 6.31(1H, d, $J=7.2\text{Hz}$), 7.32-7.42(2H, m), 7.57(1H, d, $J=6.9\text{Hz}$), 7.73-7.82(3H, m), 7.94(1H, s).

IR(CHCl_3): 3516, 3446, 2665, 1709, 1649, 1616, 1514, 1481, 1468 cm^{-1} .

20 $[\alpha]_{\text{D}}^{24} +100.7 \pm 1.4^\circ$ ($c=1.008$, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{31}\text{NO}_8 \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 77.64; H, 7.31; N, 3.23

Found(%): C, 77.64; H, 7.57; N, 3.29

Compound I-174

25 300MHz ^1H -NMR(CDCl_3) δ : 1.06(1H, m), 1.19-1.28(2H, m), 1.40-1.47(2H, m), 1.57-1.78(4H, m), 1.99-2.18(5H, m), 2.35(2H, t, $J=7.4\text{Hz}$), 2.51(1H, s), 3.21(2H, t, $J=8.7\text{Hz}$), 3.81(1H, m), 4.01(2H, s), 4.58(2H, t, $J=8.7\text{Hz}$), 5.29-5.42(2H, m),

6.02(1H, d, J=7.5Hz), 6.80(1H, d, J=3.9Hz), 7.06(1H, d, J=1.8Hz), 7.18(1H, d, J=1.8Hz), 7.36(1H, d, J=3.9Hz).

IR(CHCl₃): 3512, 3446, 3427, 2669, 1709, 1641, 1543, 1506, 1477, 1460, 1173 cm⁻¹.

5 $[\alpha]_D^{25} + 53.8 \pm 0.9^\circ$ (c=1.007, MeOH)

Elemental Analysis (C₂₈H₃₂BrNO₄S·0.1H₂O)

Calcd.(%): C, 60.02; H, 5.79; Br, 14.26; N, 2.50; S, 5.72

Found(%): C, 59.87; H, 5.68; Br, 14.13; N, 2.59; S, 5.71

Compound I-175

10 300MHz ¹H-NMR(CDCl₃) δ: 1.12(1H, m), 1.23-1.31(2H, m), 1.44-1.51(2H, m), 1.60-1.78(4H, m), 2.03-2.28(5H, m), 2.36(2H, t, J=7.4Hz), 2.56(1H, s), 3.87(1H, m), 4.21(2H, s), 5.31-5.45(2H, m), 6.21(1H, d, J=7.2Hz), 7.18-7.37(7H, m), 7.70(1H, d, J=7.2Hz), 7.80(1H, s).

IR(CHCl₃): 3514, 3444, 3423, 2667, 1709, 1649, 1537, 1502, 1454 cm⁻¹.

15 $[\alpha]_D^{25} + 78.2 \pm 1.2^\circ$ (c=1.002, MeOH)

Elemental Analysis (C₃₀H₃₃BrNO₃S·0.1H₂O)

Calcd.(%): C, 73.62; H, 6.84; N, 2.86; S, 6.55

Found(%): C, 73.49; H, 6.88; N, 2.89; S, 6.57

Compound I-176

20 300MHz ¹H-NMR(CDCl₃) δ: 1.12(1H, m), 1.23-1.32(2H, m), 1.44-1.51(2H, m), 1.61-1.78(4H, m), 2.03-2.28(5H, m), 2.36(2H, t, J=7.4Hz), 2.57(1H, s), 3.88(1H, m), 4.21(2H, s), 5.31-5.45(2H, m), 6.22(1H, d, J=7.2Hz), 6.94(1H, dd, J=1.5 and 4.8Hz), 7.04(1H, m), 7.21-7.25(2H, m), 7.35(1H, dd, J=7.2 and 7.8Hz), 7.71(1H, d, J=7.2Hz), 7.80(1H, s).

25 IR(CHCl₃): 3512, 3444, 3423, 2669, 1709, 1647, 1539, 1504 cm⁻¹.

$[\alpha]_D^{25} + 77.1 \pm 1.2^\circ$ (c=1.002, MeOH)

Elemental Analysis (C₂₈H₃₁NO₃S₂·0.2H₂O)

Calcd.(%): C, 67.63; H, 6.36; N, 2.82; S, 12.90

Found(%): C, 67.57; H, 6.34; N, 2.97; S, 12.98

Compound I-177

300MHz $^1\text{H-NMR}(\text{CDCl}_3)$ δ : 1.12(1H, m), 1.25-1.32(2H, m), 1.44-1.51(2H, m),
5 1.60-1.78(4H, m), 2.03-2.28(5H, m), 2.31(3H, s), 2.36(2H, t, $J=7.2\text{Hz}$), 2.56(1H, s), 3.87(1H, m), 4.17(2H, s), 5.31-5.45(2H, m), 6.22(1H, d, $J=7.2\text{Hz}$), 7.09 and 7.15(each 2H, each d, $J=8.1\text{Hz}$), 7.19(1H, d, $J=7.2\text{Hz}$), 7.34(1H, dd, $J=7.2$ and 7.8Hz), 7.69(1H, d, $J=7.8\text{Hz}$), 7.79(1H, s).

IR(CHCl_3): 3510, 3444, 3423, 2669, 1709, 1647, 1537, 1504 cm^{-1} .

10 $[\alpha]_{\text{D}^{25}}+75.9\pm 1.2^\circ$ (c=1.004, MeOH)

Elemental Analysis ($\text{C}_{31}\text{H}_{35}\text{NO}_3\text{S}$)

Calcd.(%): C, 74.22; H, 7.03; N, 2.79; S, 6.39

Found(%): C, 73.93; H, 7.13; N, 2.91; S, 6.38

Compound I-178

15 300MHz $^1\text{H-NMR}(\text{CDCl}_3)$ δ : 1.13(1H, m), 1.24-1.31(2H, m), 1.44-1.51(2H, m), 1.60-1.77(4H, m), 2.03-2.22(5H, m), 2.36(2H, t, $J=7.2\text{Hz}$), 2.56(1H, s), 3.88(1H, m), 4.39(2H, s), 5.31-5.45(2H, m), 6.26(1H, d, $J=7.2\text{Hz}$), 6.90-6.94(2H, m), 7.15(1H, dd, $J=1.5$ and 5.1Hz), 7.27(1H, d, $J=7.5\text{Hz}$), 7.36(1H, t, $J=7.5\text{Hz}$), 7.71(1H, d, $J=7.5\text{Hz}$), 7.80(1H, s).

20 IR(CHCl_3): 3510, 3444, 3423, 2667, 1709, 1649, 1537, 1504 cm^{-1} .

$[\alpha]_{\text{D}^{25}}+76.6\pm 1.2^\circ$ (c=1.003, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{31}\text{NO}_3\text{S}_2$)

Calcd.(%): C, 68.12; H, 6.33; N, 2.84; S, 12.99

Found(%): C, 67.83; H, 6.45; N, 3.04; S, 13.03

25 Compound I-179

300MHz $^1\text{H-NMR}(\text{CDCl}_3)$ δ : 1.04(1H, m), 1.18-1.28(2H, m), 1.39-1.47(2H, m), 1.56-1.78(4H, m), 1.98-2.18(5H, m), 2.34(2H, t, $J=7.2\text{Hz}$), 2.50(1H, m), 3.80(1H,

m), 4.08(2H, s), 5.29-5.41(2H, m), 5.95(1H, d, J=7.2Hz), 6.53(1H, d, J=3.6Hz), 7.23-7.41(10H, m).

IR(CHCl₃): 3516, 3446, 3427, 1741, 1709, 1641, 1543, 1506, 1479, 1456 cm⁻¹.

[α]_D^{24.5}+57.6±1.0° (c=1.007, MeOH)

5 Elemental Analysis (C₃₂H₃₆NO₃S·0.2H₂O)

Calcd.(%): C, 74.30; H, 6.90; N, 2.71; S, 6.20

Found(%): C, 74.24; H, 6.89; N, 2.88; S, 6.47

Compound I-180

300MHz ¹H-NMR(CDCl₃) δ : 1.17(1H, m), 1.24-1.35(2H, m), 1.48-1.55(2H, m),

10 1.61-1.79(4H, m), 2.06-2.26(5H, m), 2.37(2H, t, J=7.2Hz), 2.61(1H, m), 3.90(1H, m), 5.33-5.48(2H, m), 6.44(1H, d, J=7.2Hz), 7.31(1H, m), 7.47-7.65(5H, m), 7.90(1H, s).

IR(CHCl₃): 3516, 3440, 1714, 1655, 1604, 1514, 1473, 1446 cm⁻¹.

[α]_D²⁵+92.1±1.3° (c=1.001, MeOH)

15 Elemental Analysis (C₂₈H₂₉NO₄·0.3H₂O)

Calcd.(%): C, 74.91; H, 6.65; N, 3.12

Found(%): C, 74.81; H, 6.51; N, 3.29

Compound I-181

300MHz ¹H-NMR(CDCl₃) δ : 1.04(1H, m), 1.18-1.28(2H, m), 1.41-1.46(2H, m),

20 1.55-1.77(4H, m), 1.99-2.16(5H, m), 2.34(2H, t, J=7.4Hz), 2.51(1H, s), 3.79(3H, s), 3.80(1H, m), 4.08(2H, s), 5.29-5.42(2H, m), 5.97(1H, d, J=7.2Hz), 6.75(1H, d, J=3.9Hz), 6.85 and 7.15(each 2H, each d, J=8.4Hz), 7.37(1H, d, J=3.9Hz).

IR(CHCl₃): 3518, 3446, 3427, 1741, 1709, 1641, 1612, 1543, 1510, 1458 cm⁻¹.

[α]_D²⁵+63.6±1.0° (c=1.000, MeOH)

25 Elemental Analysis (C₂₇H₃₃NO₄S·0.2H₂O)

Calcd.(%): C, 68.88; H, 7.14; N, 2.97; S, 6.80

Found(%): C, 68.92; H, 7.02; N, 3.12; S, 6.96

Compound I-182

300MHz ^1H -NMR(CDCl_3) δ : 1.04(1H, m), 1.18-1.27(2H, m), 1.40-1.45(2H, m), 1.59-1.78(4H, m), 1.99-2.14(5H, m), 2.34(2H, t, $J=7.4\text{Hz}$), 2.51(1H, s), 3.80(1H, m), 4.37(2H, s), 5.29-5.41(2H, m), 5.97(1H, d, $J=7.2\text{Hz}$), 6.82(1H, d, $J=3.6\text{Hz}$), 7.20(1H, s), 7.34-7.37(3H, m), 7.69(1H, m), 7.86(1H, m).

IR(CHCl_3): 3512, 3444, 3427, 2669, 1709, 1643, 1543, 1508, 1458, 1431 cm^{-1} .

$[\alpha]_{\text{D}}^{25}+60.7\pm 1.0^\circ$ ($c=1.008$, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{31}\text{NO}_3\text{S}_2\cdot 0.3\text{H}_2\text{O}$)

Calcd.(%): C, 67.39; H, 6.38; N, 2.81; S, 12.85

Found(%): C, 67.44; H, 6.30; N, 3.15; S, 12.81

Compound I-183

300MHz ^1H -NMR(CDCl_3) δ : 1.04(1H, m), 1.18-1.26(2H, m), 1.39-1.44(2H, m), 1.54-1.75(4H, m), 1.99-2.15(5H, m), 2.32(2H, t, $J=7.4\text{Hz}$), 2.50(1H, s), 3.80(1H, m), 4.12(2H, s), 5.28-5.42(2H, m), 6.05(1H, d, $J=7.5\text{Hz}$), 6.78(1H, d, $J=3.9\text{Hz}$), 6.82-6.87(2H, m), 7.07-7.14(2H, m), 7.35(1H, d, $J=3.9\text{Hz}$).

IR(CHCl_3): 3508, 3444, 3197, 1707, 1635, 1543, 1508, 1456 cm^{-1} .

$[\alpha]_{\text{D}}^{25}+64.7\pm 1.0^\circ$ ($c=1.004$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{31}\text{NO}_4\text{S}\cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 68.30; H, 6.92; N, 3.06; S, 7.01

Found(%): C, 68.21; H, 6.96; N, 3.09; S, 6.93

Compound I-184

300MHz ^1H -NMR(CDCl_3) δ : 1.15(1H, m), 1.26-1.35(2H, m), 1.47-1.56(2H, m), 1.62-1.82(4H, m), 2.05-2.26(5H, m), 2.37(2H, t, $J=7.2\text{Hz}$), 2.61(1H, m), 3.92(1H, m), 3.93(2H, s), 5.32-5.47(2H, m), 6.34(1H, d, $J=6.9\text{Hz}$), 7.31-7.43(2H, m), 7.53-7.59(2H, m), 7.67(1H, m), 7.5(1H, d, $J=6.9\text{Hz}$), 8.17(1H, s).

IR(CHCl_3): 3514, 3444, 2667, 1709, 1651, 1572, 1516, 1481, 1452 cm^{-1} .

$[\alpha]_{\text{D}}^{24}+81.2\pm 1.2^\circ$ ($c=1.002$, MeOH)

Elemental Analysis ($C_{28}H_{31}NO_3 \cdot 0.2H_2O$)

Calcd.(%): C, 77.64; H, 7.31; N, 3.23

Found(%): C, 77.59; H, 7.15; N, 3.44

Compound I-185

- 5 300MHz 1H -NMR($CDCl_3$) δ : 1.06(1H, m), 1.21-1.28(2H, m), 1.41-1.46(2H, m), 1.58-1.78(4H, m), 2.00-2.16(5H, m), 2.35(2H, t, $J=7.2Hz$), 2.51(1H, m), 3.79(1H, m), 4.16(2H, s), 5.31-5.40(2H, m), 5.93(1H, d, $J=7.8Hz$), 6.80(1H, d, $J=3.6Hz$), 7.03-7.12(2H, m), 7.20-7.28(2H, m), 7.35(1H, d, $J=3.6Hz$).

IR($CHCl_3$): 3518, 3444, 3427, 1741, 1709, 1643, 1543, 1506, 1456 cm^{-1} .

- 10 $[\alpha]_D^{24} + 56.2 \pm 0.9^\circ$ ($c=1.03$, $CHCl_3$)

Elemental Analysis ($C_{26}H_{30}FNO_5S \cdot 0.4H_2O$)

Calcd.(%): C, 67.48; H, 6.71; N, 3.03; S, 6.93; F, 4.11

Found(%): C, 67.49; H, 6.72; N, 3.09; S, 6.93; F, 4.11

Compound I-186

- 15 300MHz 1H -NMR($CDCl_3$) δ : 1.04(1H, m), 1.19-1.29(2H, m), 1.41-1.46(2H, m), 1.58-1.82(4H, m), 2.00-2.16(5H, m), 2.34(2H, t, $J=7.4Hz$), 2.51(1H, s), 3.80(1H, m), 4.17(2H, s), 5.08(2H, s), 5.28-5.41(2H, m), 5.90(1H, d, $J=7.5Hz$), 6.76(1H, d, $J=3.9Hz$), 6.90-6.95(2H, m), 7.18-7.25(2H, m), 7.31-7.38(6H, m).

IR($CHCl_3$): 3516, 3446, 3427, 1741, 1709, 1641, 1601, 1543, 1502, 1454 cm^{-1} .

- 20 $[\alpha]_D^{24} + 53.9 \pm 0.9^\circ$ ($c=1.005$, MeOH)

Elemental Analysis ($C_{33}H_{37}NO_4S$)

Calcd.(%): C, 72.90; H, 6.86; N, 2.58; S, 5.90

Found(%): C, 72.64; H, 6.92; N, 2.52; S, 5.74

Compound I-187

- 25 300MHz 1H -NMR($CDCl_3$) δ : 1.04(1H, m), 1.18-1.28(2H, m), 1.41-1.46(2H, m), 1.57-1.78(4H, m), 1.99-2.15(5H, m), 2.34(2H, t, $J=7.4Hz$), 2.51(1H, s), 3.80(1H, m), 4.16(2H, s), 4.54-4.57(2H, m), 5.24-5.41(4H, m), 5.94(1H, d, $J=7.5Hz$),

6.04(1H, m), 6.79(1H, d, $J=3.9\text{Hz}$), 6.85-6.93(2H, m), 7.15-7.24(2H, m), 7.34(1H, d, $J=3.9\text{Hz}$).

IR(CHCl₃): 3516, 3446, 3427, 1739, 1709, 1641, 1543, 1506, 1477 cm⁻¹.

$[\alpha]_{\text{D}}^{24}+59.0\pm 1.0^\circ$ (c=1.007, MeOH)

5 Elemental Analysis (C₂₉H₃₅NO₄S·0.2H₂O)

Calcd.(%): C, 70.05; H, 7.18; N, 2.82; S, 6.45

Found(%): C, 69.97; H, 7.16; N, 2.80; S, 6.52

Compound I-188

mp.84-85°C

10 300MHz ¹H-NMR(CDCl₃) δ : 1.04(1H, m), 1.18-1.29(2H, m), 1.41-1.46(2H, m), 1.56-1.81(4H, m), 2.00-2.17(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.51(1H, s), 3.80(1H, m), 4.07(2H, s), 5.05(2H, s), 5.29-5.42(2H, m), 5.93(1H, d, $J=7.5\text{Hz}$), 6.75(1H, d, $J=3.9\text{Hz}$), 6.92 and 7.15(each 2H, each d, $J=8.7\text{Hz}$), 7.31-7.44(6H, d, m).

IR(CHCl₃): 3521, 3446, 3427, 1741, 1709, 1643, 1612, 1543, 1510, 1456 cm⁻¹.

15 $[\alpha]_{\text{D}}^{24}+56.1\pm 1.0^\circ$ (c=1.002, MeOH)

Elemental Analysis (C₃₃H₃₇NO₄S)

Calcd.(%): C, 72.90; H, 6.86; N, 2.58; S, 5.90

Found(%): C, 72.78; H, 6.88; N, 2.74; S, 5.84

Compound I-189

20 300MHz ¹H-NMR(CDCl₃) δ : 1.04(1H, m), 1.19-1.29(2H, m), 1.41-1.46(2H, m), 1.56-1.79(4H, m), 2.00-2.15(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.51(1H, s), 3.80(1H, m), 4.07(2H, s), 4.51-4.53(2H, m), 5.26-5.44(4H, m), 5.94(1H, d, $J=7.5\text{Hz}$), 6.05(1H, m), 6.76(1H, d, $J=3.9\text{Hz}$), 6.87 and 7.14(each 2H, each d, $J=8.7\text{Hz}$), 7.36(1H, d, $J=3.9\text{Hz}$).

25 IR(CHCl₃): 3512, 3446, 3427, 1741, 1709, 1643, 1612, 1543, 1508, 1458 cm⁻¹.

$[\alpha]_{\text{D}}^{24}+61.6\pm 1.0^\circ$ (c=1.004, MeOH)

Elemental Analysis (C₂₉H₃₅NO₄S·0.4H₂O)

Calcd.(%): C, 69.54; H, 7.20; N, 2.78; S, 6.40

Found(%): C, 69.47; H, 7.22; N, 2.84; S, 6.51

Compound I-190

300MHz ^1H -NMR(CDCl_3) δ : 1.05(1H, m), 1.18-1.32(2H, m), 1.39-1.48(2H, m),

1.54-1.80(4H, m), 1.98-2.20(5H, m), 2.34(2H, t, $J=7.2\text{Hz}$), 2.51(1H, m), 3.81(1H,

4.04(2H, s), 5.29-5.42(2H, m), 5.93(1H, d, $J=7.5\text{Hz}$), 6.68-6.78(2H, m),

7.36(1H, d, $J=3.6\text{Hz}$).

IR(CHCl_3): 3517, 3446, 3427, 1741, 1709, 1643, 1543, 1504, 1489, 1444, 1250,

1041 cm^{-1} .

10 $[\alpha]_{\text{D}^{24}+59.4\pm 1.0^\circ}$ ($c=1.011$, MeOH)

Elemental Analysis ($\text{C}_{27}\text{H}_{31}\text{NO}_5\text{S}$)

Calcd.(%): C, 67.34; H, 6.49; N, 2.91; S, 6.66

Found(%): C, 67.27; H, 6.45; N, 3.04; S, 6.63

Compound I-191

15 300MHz ^1H -NMR(CDCl_3) δ : 1.06(1H, m), 1.18-1.32(2H, m), 1.39-1.48(2H, m),

1.54-1.80(4H, m), 1.98-2.20(5H, m), 2.34(2H, t, $J=7.5\text{Hz}$), 2.51(1H, m), 3.81(1H,

4.12(2H, s), 5.30-5.42(2H, m), 6.04(1H, d, $J=7.2\text{Hz}$), 6.77(1H, d, $J=3.6\text{Hz}$),

6.89-7.04(3H, m), 7.28(1H, m), 7.38(1H, d, $J=3.6\text{Hz}$).

IR(CHCl_3): 3518, 3446, 3427, 1739, 1709, 1643, 1545, 1506 cm^{-1} .

20 $[\alpha]_{\text{D}^{25}+62.6\pm 1.0^\circ}$ ($c=1.009$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{30}\text{FNO}_3\text{S}$)

Calcd.(%): C, 68.54; H, 6.64; N, 3.07; S, 7.04; F, 4.17

Found(%): C, 68.25; H, 6.37; N, 3.19; S, 7.12; F, 4.12

Compound I-192

25 300MHz ^1H -NMR(CDCl_3) δ : 1.06(1H, m), 1.18-1.32(2H, m), 1.40-1.48(2H, m),

1.54-1.80(4H, m), 1.98-2.20(5H, m), 2.35(2H, t, $J=7.5\text{Hz}$), 2.52(1H, m), 3.81(1H,

4.19(2H, s), 5.30-5.42(2H, m), 5.99(1H, d, $J=7.2\text{Hz}$), 6.78 and 7.37(each 1H,

each d, each $J=3.6\text{Hz}$), 7.40-7.54(4H, m).

IR(CHCl_3): 3516, 3446, 3427, 1740, 1709, 1643, 1545, 1506, 1450, 1330, 1167, 1130, 1074 cm^{-1} .

$[\alpha]_{\text{D}}^{26}+55.4\pm0.9^\circ$ ($c=1.029$, MeOH)

5 Elemental Analysis ($\text{C}_{27}\text{H}_{30}\text{F}_3\text{NO}_3\text{S}$)

Calcd.(%): C, 64.14; H, 5.98; N, 2.77; S, 6.34; F, 11.27

Found(%): C, 63.95; H, 5.99; N, 2.90; S, 6.36; F, 10.98

Compound I-193

300MHz ^1H -NMR(CDCl_3) δ : 1.05(1H, m), 1.24-1.28(2H, m), 1.42-1.46(2H, m),

10 1.58-1.79(4H, m), 2.01-2.21(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.51(1H, m), 3.80(1H, m), 4.26(2H, s), 5.33-5.38(2H, m), 5.94(1H, d, $J=7.2\text{Hz}$), 6.79(1H, d, $J=3.9\text{Hz}$), 7.21-7.28(3H, m), 7.35-7.40(2H, m).

IR(CHCl_3): 3518, 3446, 3427, 1743, 1709, 1643, 1543, 1506 cm^{-1} .

$[\alpha]_{\text{D}}^{26}+55.5\pm0.9^\circ$ ($c=1.06$, CHCl_3)

15 Elemental Analysis ($\text{C}_{26}\text{H}_{30}\text{ClINO}_3\text{S}\cdot0.3\text{H}_2\text{O}$)

Calcd.(%): C, 65.41; H, 6.46; N, 2.93; S, 6.72; Cl, 7.43

Found(%): C, 65.41; H, 6.40; N, 3.08; S, 6.75; Cl, 7.31

Compound I-194

300MHz ^1H -NMR(CDCl_3) δ : 1.04(1H, m), 1.18-1.28(2H, m), 1.39-1.46(2H, m),

20 1.56-1.78(4H, m), 1.98-2.16(5H, m), 2.30(6H, s), 2.34(2H, t, $J=7.2\text{Hz}$), 2.50(1H, m), 3.80(1H, m), 4.16(2H, s), 5.28-5.41(2H, m), 5.93(1H, d, $J=6.9\text{Hz}$), 6.78(1H, d, $J=3.9\text{Hz}$), 7.03-7.14(3H, m), 7.77(1H, d, $J=3.9\text{Hz}$).

IR(CHCl_3): 3516, 3446, 3427, 2669, 1709, 1641, 1543, 1506, 1456 cm^{-1} .

$[\alpha]_{\text{D}}^{24}+66.6\pm1.0^\circ$ ($c=1.009$, MeOH)

25 Elemental Analysis ($\text{C}_{28}\text{H}_{35}\text{NO}_3\text{S}\cdot0.2\text{H}_2\text{O}$)

Calcd.(%): C, 71.67; H, 7.60; N, 2.98; S, 6.83

Found(%): C, 71.71; H, 7.54; N, 3.15; S, 6.81

Compound I-195

300MHz ^1H -NMR(CDCl_3) δ : 1.05(1H, m), 1.22-1.28(2H, m), 1.42-1.47(2H, m),
1.59-1.78(4H, m), 2.01-2.17(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.50(1H, m), 3.82(1H,
m), 4.32(2H, s), 5.35-5.37(2H, m), 5.94(1H, d, $J=6.9\text{Hz}$), 6.76(1H, d, $J=3.9\text{Hz}$),
5 7.33-7.39(3H, m), 7.50 (1H, m), 7.69(1H, d, $J=3.9\text{Hz}$).

IR(CHCl_3): 3316, 3446, 3427, 1743, 1709, 1643, 1543, 1506, 1456, 1163, 1126
 cm^{-1} .

$[\alpha]_{\text{D}^{25}}+54.5\pm 1.0^\circ$ ($c=1.00$, CHCl_3)

Elemental Analysis ($\text{C}_{27}\text{H}_{30}\text{F}_3\text{NO}_3\text{S}\cdot 0.2\text{H}_2\text{O}$)

10 Calcd.(%): C, 63.93; H, 6.02; N, 2.75; S, 6.30

Found(%): C, 63.92; H, 5.85; N, 2.94; S, 6.38

Compound I-196

300MHz ^1H -NMR(CDCl_3) δ : 1.05(1H, m), 1.22-1.28(2H, m), 1.42-1.46(2H, m),
1.58-1.80(4H, m), 2.01-2.21(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.52(1H, m), 3.81(1H,
15 m), 3.88(3H, s), 4.06(2H, s), 5.33-5.38(2H, m), 5.94(1H, d, $J=10.2\text{Hz}$), 6.70(1H,
d, $J=3.6\text{Hz}$), 6.87-6.97(3H, m), 7.36(1H, d, $J=3.6\text{Hz}$).

IR(CHCl_3): 3517, 3446, 3427, 2673, 1741, 1709, 1643, 1543, 1516, 1274 1030
 cm^{-1} .

$[\alpha]_{\text{D}^{25}}+54.2\pm 0.9^\circ$ ($c=1.00$, CHCl_3)

20 Elemental Analysis ($\text{C}_{27}\text{H}_{32}\text{FNO}_4\text{S}\cdot 0.3\text{H}_2\text{O}$)

Calcd.(%): C, 66.04; H, 6.69; N, 2.85; S, 6.53; F, 3.87

Found(%): C, 66.16; H, 6.61; N, 2.82; S, 6.34; F, 3.66

Compound I-197

300MHz ^1H -NMR(CDCl_3) δ : 1.05(1H, m), 1.18-1.27(2H, m), 1.41-1.45(2H, m),
25 1.56-1.77(4H, m), 1.98-2.13(5H, m), 2.34(2H, t, $J=7.5\text{Hz}$), 2.50(1H, s), 3.21(2H,
t, $J=8.7\text{Hz}$), 3.80(1H, m), 4.07(2H, s), 4.57(2H, t, $J=8.7\text{Hz}$), 5.29-5.41(2H, m),
6.00(1H, d, $J=7.5\text{Hz}$), 6.79(1H, d, $J=3.6\text{Hz}$), 6.79(1H, dd, $J=7.2$ and 7.5Hz),

6.95(1H, d, J=7.5Hz), 7.09(1H, d, J=7.2Hz), 7.36(1H, d, J=3.6Hz).

IR(CHCl₃): 3514, 3446, 3427, 2669, 1739, 1709, 1641, 1543, 1506, 1477, 1456,
1441 cm⁻¹.

[α]_D²⁵+61.1 \pm 1.0° (c=1.004, MeOH)

5 Elemental Analysis (C₂₈H₃₃NO₄S·0.2H₂O)

Calcd.(%): C, 69.60; H, 6.97; N, 2.90; S, 6.63

Found(%): C, 69.68; H, 6.89; N, 3.19; S, 6.65

Compound I-198

300MHz ¹H-NMR(CDCl₃) δ : 1.04(1H, m), 1.18-1.27(2H, m), 1.40-1.46(2H, m),

10 1.56-1.76(4H, m), 1.98-2.13(5H, m), 2.33(2H, t, J=7.5Hz), 2.50(1H, s), 3.21(2H,
t, J=8.7Hz), 3.80(1H, m), 4.24(2H, s), 5.28-5.40(2H, m), 5.97(1H, d, J=7.2Hz),
6.79(1H, d, J=3.6Hz), 7.22(1H, dd, J=1.2 and 8.1Hz), 7.29(1H, d, J=5.4Hz),
7.38(1H, d, J=3.6Hz), 7.44(1H, d, J=5.4Hz), 7.68(1H, d, J=1.2Hz), 7.81(1H, d,
J=8.1Hz).

15 IR(CHCl₃): 3516, 3446, 3427, 1741, 1709, 1643, 1543, 1506, 1547 cm⁻¹.

[α]_D²⁵+62.0 \pm 1.0° (c=1.000, MeOH)

Elemental Analysis (C₂₈H₃₁NO₃S₂·0.2H₂O)

Calcd.(%): C, 67.63; H, 6.36; N, 2.82; S, 12.90

Found(%): C, 67.55; H, 6.28; N, 2.97; S, 12.90

20 Compound I-199

300MHz ¹H-NMR(CDCl₃) δ : 1.04(1H, m), 1.17-1.27(2H, m), 1.40-1.45(2H, m),

1.54-1.77(4H, m), 1.98-2.15(5H, m), 2.34(2H, t, J=7.2Hz), 2.51(1H, s), 3.80(1H,
m), 4.25(2H, s), 5.28-5.41(2H, m), 5.97(1H, d, J=7.2Hz), 6.79(1H, d, J=3.9Hz),
7.24(1H, dd, J=1.5 and 8.1Hz), 7.30(1H, d, J=5.4Hz), 7.38(1H, d, J=3.6Hz),

25 7.41(1H, d, J=5.4Hz), 7.73(1H, m), 7.76(1H, d, J=8.1Hz).

IR(CHCl₃): 3516, 3447, 3427, 1741, 1709, 1643, 1543, 1506, 1458 cm⁻¹.

[α]_D²⁵+62.1 \pm 1.0° (c=1.008, MeOH)

Elemental Analysis ($C_{28}H_{31}NO_3S_2 \cdot 0.3H_2O$)

Calcd.(%): C, 67.39; H, 6.38; N, 2.81; S, 12.85

Found(%): C, 67.42; H, 6.29; N, 2.99; S, 12.94

Compound I-200

- 5 300MHz 1H -NMR($CDCl_3$) δ : 1.03(1H, m), 1.16-1.22(2H, m), 1.39-1.44(2H, m), 1.53-1.76(4H, m), 1.97-2.14(5H, m), 2.33(2H, t, $J=7.5Hz$), 2.49(1H, s), 3.79(1H, m), 4.39(2H, s), 5.28-5.40(2H, m), 5.98(1H, d, $J=7.5Hz$), 6.86(1H, d, $J=3.9Hz$), 7.21(1H, d, $J=6.9Hz$), 7.35(1H, dd, $J=6.9$ and $8.1Hz$), 7.36(1H, d, $J=5.4Hz$), 7.36(1H, d, $J=3.9Hz$), 7.42(1H, d, $J=5.4Hz$), 7.74(1H, d, $J=8.1Hz$).

- 10 IR($CHCl_3$): 3516, 3446, 3427, 1739, 1709, 1643, 1543, 1506, 1458 cm^{-1} .

$[\alpha]_D^{25} + 58.4 \pm 1.0^\circ$ ($c=1.003$, MeOH)

Elemental Analysis ($C_{28}H_{31}NO_3S_2 \cdot 0.2H_2O$)

Calcd.(%): C, 67.63; H, 6.36; N, 2.82; S, 12.90

Found(%): C, 67.62; H, 6.27; N, 3.09; S, 12.92

- 15 Compound I-201

300MHz 1H -NMR($CDCl_3 + CD_3OD$) δ : 1.08(1H, m), 1.22-1.28(2H, m), 1.41-1.46(2H, m), 1.55-1.71(4H, m), 2.01-2.10(5H, m), 2.29(2H, t, $J=7.4Hz$), 2.51(1H, s), 3.77(1H, m), 4.29(2H, s), 5.34-5.40(2H, m), 6.80(1H, d, $J=3.9Hz$), 6.93(1H, dd, $J=1.8$ and $8.7Hz$), 7.10(1H, d, $J=1.8Hz$), 7.22(1H, s), 7.36(1H, d, $J=3.9Hz$), 7.65(1H, d, $J=8.7Hz$).

- 20 IR($CHCl_3$): 3508, 3423, 3236, 1709, 1633, 1601, 1545, 1510, 1441 cm^{-1} .

$[\alpha]_D^{25} + 57.5 \pm 1.0^\circ$ ($c=1.006$, MeOH)

Elemental Analysis ($C_{28}H_{31}NO_4S_2 \cdot 0.5H_2O$)

Calcd.(%): C, 64.84; H, 6.21; N, 2.70; S, 12.36

- 25 Found(%): C, 67.57; H, 6.20; N, 2.93; S, 12.38

Compound I-202

300MHz 1H -NMR($CDCl_3$) δ : 1.05(1H, m), 1.24-1.28(2H, m), 1.41-1.48(2H, m),

1.58-1.79(4H, m), 2.02-2.22(5H, m), 2.33(2H, t, $J=7.5\text{Hz}$), 2.51(1H, m), 3.78(1H, m), 4.25(2H, s), 4.70(2H, s), 5.31-5.42(2H, m), 6.00(1H, d, $J=7.2\text{Hz}$), 6.74(1H, d, $J=3.6\text{Hz}$), 7.24-7.42(5H, m).

IR(CHCl₃): 3518, 3444, 3427, 1709, 1643, 1543, 1506, 1456 cm⁻¹.

5 $[\alpha]_{\text{D}^{26}}+51.9\pm0.9^\circ$ (c=1.04, CHCl₃)

Elemental Analysis (C₂₇H₃₃FNO₄S·0.7H₂O)

Calcd.(%): C, 67.53; H, 7.22; N, 2.92; S, 6.02

Found(%): C, 67.92; H, 7.13; N, 2.88; S, 6.11

Compound I-203

10 300MHz ¹H-NMR(CDCl₃) δ : 1.02(1H, m), 1.22-1.28(2H, m), 1.40-1.42(2H, m), 1.57-1.72(4H, m), 1.82-1.85(4H, m), 2.01-2.13(5H, m), 2.27(2H, t, $J=7.5\text{Hz}$), 2.49(1H, m), 2.71-2.73(4H, m), 3.67(1H, d, $J=13.2\text{Hz}$), 3.76(1H, m), 3.83(1H, d, $J=13.2\text{Hz}$), 4.26(1H, d, $J=16.5\text{Hz}$), 4.34(1H, d, $J=16.5\text{Hz}$), 5.33-5.45(2H, m), 6.04(1H, d, $J=7.2\text{Hz}$), 6.70(1H, d, $J=3.6\text{Hz}$), 7.16-7.33(4H, m), 7.43(1H, d, $J=3.6\text{Hz}$).

15 IR(CHCl₃): 3518, 3446, 3424, 2472, 1707, 1643, 1545, 1506, 1456 cm⁻¹.

$[\alpha]_{\text{D}^{26}}+41.9\pm0.8^\circ$ (c=1.03, CHCl₃)

Elemental Analysis (C₃₁H₄₀N₂O₃S·0.6H₂O)

Calcd.(%): C, 70.05; H, 7.81; N, 5.27; S, 6.03

20 Found(%): C, 70.01; H, 7.81; N, 5.18; S, 5.86

Compound I-204

300MHz ¹H-NMR(CDCl₃) δ : 1.06(1H, m), 1.22-1.29(2H, m), 1.41-1.46(2H, m), 1.58-1.72(4H, m), 2.03-2.17(5H, m), 2.31(2H, t, $J=7.2\text{Hz}$), 2.51(1H, m), 2.60(6H, s), 3.79(1H, m), 3.94(1H, d, $J=13.2\text{Hz}$), 3.99(1H, d, $J=13.2\text{Hz}$), 4.39(2H, s), 5.30-5.44(2H, m), 6.01(1H, d, $J=7.2\text{Hz}$), 6.72(1H, d, $J=3.9\text{Hz}$), 7.26-7.40(4H, m), 7.56(1H, d, $J=7.2\text{Hz}$).

IR(CHCl₃): 3519, 3444, 3425, 2455, 1753, 1712, 1643, 1545, 1508, 1458 cm⁻¹.

$[\alpha]_{\text{D}}^{26} + 41.2 \pm 0.8^\circ$ ($c=1.02$, CHCl_3)

Elemental Analysis ($\text{C}_{29}\text{H}_{38}\text{N}_2\text{O}_3\text{S} \cdot 1.7\text{H}_2\text{O} \cdot 0.2\text{CHCl}_3$)

Calcd.(%): C, 63.86; H, 7.63; N, 5.10; S, 5.84; Cl, 3.87

Found(%): C, 63.88; H, 7.51; N, 4.94; S, 5.63; Cl, 4.22

5 Compound I-205

300MHz ^1H -NMR(CDCl_3) δ : 1.14(1H, m), 1.24-1.36(2H, m), 1.45-1.54(2H, m), 1.60-1.79(4H, m), 2.03-2.26(5H, m), 2.36(2H, t, $J=7.5\text{Hz}$), 2.58(1H, m), 3.19-3.26(4H, m), 3.89(1H, m), 5.32-5.45(2H, m), 6.33(1H, d, $J=6.3\text{Hz}$), 7.24(1H, d, $J=7.2\text{Hz}$), 7.34 and 7.46(each 1H, each m), 7.61(1H, dd, $J=1.5$ and 8.4Hz), 7.68(1H, d, $J=1.5\text{Hz}$), 7.98-8.04(2H, m).

IR(CHCl_3): 3518, 3444, 2667, 1709, 1649, 1597, 1514, 1483, 1450, 1294 cm^{-1} .

$[\alpha]_{\text{D}}^{25} + 78.7 \pm 1.2^\circ$ ($c=1.003$, MeOH)

Elemental Analysis ($\text{C}_{30}\text{H}_{33}\text{NO}_4$)

Calcd.(%): C, 75.54; H, 7.10; N, 2.94

15 Found(%): C, 75.62; H, 7.05; N, 2.94

Compound I-206

300MHz ^1H -NMR(CDCl_3) δ : 1.10(1H, m), 1.22-1.36(2H, m), 1.40-1.52(2H, m), 1.56-1.81(4H, m), 2.00-2.24(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.50(1H, m), 3.84(1H, m), 3.99(2H, s), 5.30-5.43(2H, m), 6.05(1H, d, $J=3.3\text{Hz}$), 6.29(1H, d, $J=7.8\text{Hz}$), 6.99-7.05(3H, m), 7.17-7.22(2H, m).

IR(CHCl_3): 3512, 3435, 1739, 1709, 1653, 1606, 1549, 1510 cm^{-1} .

$[\alpha]_{\text{D}}^{26} + 71.0 \pm 1.1^\circ$ ($c=1.005$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{30}\text{FNO}_4$)

Calcd.(%): C, 71.05; H, 6.88; N, 3.19; F, 4.32

25 Found(%): C, 70.78; H, 6.97; N, 3.30; F, 4.27

Compound I-207

300MHz ^1H -NMR(CDCl_3) δ : 1.10(1H, m), 1.22-1.34(2H, m), 1.40-1.50(2H, m),

1.56-1.81(4H, m), 2.00-2.24(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.50(1H, m), 3.84(1H, m), 4.02(2H, s), 5.30-5.43(2H, m), 6.07(1H, d, $J=3.3\text{Hz}$), 6.30(1H, d, $J=7.5\text{Hz}$), 7.02(1H, d, $J=3.3\text{Hz}$), 7.22-7.36(5H, m).

IR(CHCl₃): 3516, 3435, 2669, 1709, 1651, 1606, 1547, 1498 cm⁻¹.

5 $[\alpha]_{\text{D}}^{24}+76.5\pm 1.2^\circ$ (c=1.005, MeOH)

Elemental Analysis (C₂₆H₃₁FNO₄·0.1H₂O)

Calcd.(%): C, 73.77; H, 7.43; N, 3.31

Found(%): C, 73.63; H, 7.27; N, 3.42

Compound I-208

10 300MHz ¹H-NMR(CDCl₃) δ : 1.04(1H, m), 1.16-1.26(2H, m), 1.39-1.44(2H, m), 1.55-1.76(4H, m), 1.98-2.18(5H, m), 2.33(2H, t, $J=7.2\text{Hz}$), 2.50(1H, s), 3.79(1H, m), 4.42(2H, s), 5.28-5.40(2H, m), 5.98(1H, d, $J=6.9\text{Hz}$), 6.78(1H, d, $J=2.1\text{Hz}$), 6.84(1H, d, $J=3.6\text{Hz}$), 7.12-7.21(2H, m), 7.36(1H, d, $J=3.6\text{Hz}$), 7.50(1H, dd, $J=1.5$ and 7.5Hz), 7.63(1H, d, 2.1Hz).

15 IR(CHCl₃): 3516, 3446, 3427, 2665, 1741, 1709, 1643, 1523, 1506, 1458, 1427 cm⁻¹.

$[\alpha]_{\text{D}}^{25}+63.4\pm 1.0^\circ$ (c=1.006, MeOH)

Elemental Analysis (C₂₈H₃₁NO₄S·0.2H₂O)

Calcd.(%): C, 69.89; H, 6.58; N, 2.91; S, 6.66

20 Found(%): C, 69.68; H, 6.48; N, 3.10; S, 6.62

Compound I-209

300MHz ¹H-NMR(CDCl₃) δ : 1.07(1H, m), 1.22-1.29(2H, m), 1.42-1.47(2H, m), 1.59-1.82(4H, m), 2.01-2.20(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.52(1H, m), 2.94(3H, s), 3.81(1H, m), 4.19(2H, s), 4.44(2H, s), 5.31-5.38(2H, m), 5.35(1H, d, $J=7.2\text{Hz}$), 6.63-6.72(4H, m), 7.16-7.25(6H, m), 7.36(1H, d, $J=3.6\text{Hz}$).

25 IR(CHCl₃): 3514, 3444, 3427, 1741, 1709, 1643, 1599, 1543, 1506, 1456 cm⁻¹.

$[\alpha]_{\text{D}}^{26}+50.8\pm 0.9^\circ$ (c=1.04, CHCl₃)

Elemental Analysis ($C_{34}H_{40}N_2O_3S \cdot 0.7H_2O$)

Calcd.(%): C, 71.72; H, 7.33; N, 4.92; S, 5.63

Found(%): C, 71.81; H, 7.29; N, 4.81; S, 5.54

Compound I-210

300MHz 1H -NMR($CDCl_3$) δ : 1.14-1.68(11H, m), 1.91-2.16(9H, m), 2.21(2H, t, $J=7.2$ Hz), 2.57(1H, m), 2.98(1H, m), 3.71(1H, m), 3.89(2H, s), 4.28(1H, d, $J=16.5$ Hz), 4.30(1H, d, $J=16.5$ Hz), 5.28-5.50(3H, m), 6.56(1H, m), 6.75(1H, m), 7.20-7.33(2H, m), 7.49-7.55(2H, m).

IR($CHCl_3$): 3518, 3425, 1753, 1711, 1641, 1545, 1508, 1456 cm^{-1} .

$[\alpha]_D^{26} + 35.6 \pm 0.7^\circ$ ($c=1.03$, $CHCl_3$)

Compound I-211

300MHz 1H -NMR($CDCl_3$) δ : 1.04(1H, m), 1.17-1.28(2H, m), 1.39-1.46(2H, m), 1.54-1.78(4H, m), 1.98-2.19(5H, m), 2.33(2H, t, $J=7.2$ Hz), 2.51(1H, m), 3.80(1H, m), 4.29(2H, s), 5.28-5.40(2H, m), 5.95(1H, d, $J=7.2$ Hz), 6.82(1H, d, $J=3.6$ Hz), 7.23(1H, dd, $J=1.5$ and 8.1Hz), 7.30-7.47(4H, m), 7.55(1H, d, $J=8.1$ Hz), 7.89(1H, d, $J=7.8$ Hz), 7.93(1H, dd, $J=1.5$ and 7.8Hz).

IR($CHCl_3$): 3510, 3446, 3427, 2671, 1739, 1709, 1641, 1545, 1506, 1458, 1427 cm^{-1} .

$[\alpha]_D^{24} + 60.2 \pm 1.0^\circ$ ($c=1.006$, MeOH)

Elemental Analysis ($C_{32}H_{33}NO_4S \cdot 0.2H_2O$)

Calcd.(%): C, 72.34; H, 6.34; N, 2.64; S, 6.04

Found(%): C, 72.28; H, 6.25; N, 2.72; S, 5.93

Compound I-212

300MHz 1H -NMR($CDCl_3$) δ : 1.05(1H, m), 1.18-1.30(2H, m), 1.38-1.47(2H, m), 1.54-1.80(4H, m), 1.98-2.20(5H, m), 2.34(2H, t, $J=7.5$ Hz), 2.51(1H, m), 3.78(3H, s), 3.80(1H, m), 3.86(3H, s), 4.15(2H, s), 5.29-5.42(2H, m), 5.93(1H, d, $J=7.5$ Hz), 6.78-6.85(3H, m), 7.01(1H, t, $J=8.1$ Hz), 7.36(1H, d, $J=3.9$ Hz).

IR(CHCl₃): 3516, 3446, 3425, 2667, 1739, 1709, 1641, 1543, 1506, 1481, 1273, 1076 cm⁻¹.

[α]_D²⁵+60.8±1.0° (c=1.002, MeOH)

Elemental Analysis (C₂₈H₃₅NO₅S·0.1H₂O)

5 Calcd.(%): C, 67.33; H, 7.10; N, 2.80; S, 6.42

Found(%): C, 67.21; H, 7.08; N, 2.92; S, 6.45

Compound I-213

300MHz ¹H-NMR(CDCl₃) δ : 1.08(1H, m), 1.19-1.30(2H, m), 1.42-1.47(2H, m), 1.58-1.78(4H, m), 2.01-2.16(5H, m), 2.38(2H, t, J=7.2Hz), 2.39(3H, s), 2.53(1H, s), 3.82(1H, m), 4.15(2H, s), 5.31-5.44(2H, m), 5.87(1H, s), 6.05(1H, d, J=7.2Hz), 6.86(1H, d, J=3.9Hz), 7.38(1H, d, J=3.9Hz).

IR(CHCl₃): 3516, 3444, 3427, 2669, 1709, 1643, 1608, 1545, 1508, 1456 cm⁻¹.

[α]_D²⁵+64.3±1.0° (c=1.012, MeOH)

Elemental Analysis (C₂₄H₃₀N₂O₄S·0.2H₂O)

15 Calcd.(%): C, 64.61; H, 6.87; N, 6.28; S, 7.19

Found(%): C, 64.70; H, 6.84; N, 6.34; S, 7.27

Compound I-214

300MHz ¹H-NMR(CDCl₃) δ : 1.06(1H, m), 1.19-1.28(2H, m), 1.41-1.46(2H, m), 1.58-1.79(4H, m), 2.00-2.15(5H, m), 2.33-2.37(5H, m), 2.51(1H, s), 3.81-3.82(4H, m), 4.08(2H, s), 5.29-5.42(2H, m), 5.93(1H, d, J=6.9Hz), 6.70(1H, s), 6.72(1H, d, J=7.8Hz), 6.77(1H, d, J=3.6Hz), 7.04(1H, d, J=7.8Hz), 7.34(1H, d, J=3.6Hz).

IR(CHCl₃): 3516, 3446, 3427, 2669, 1741, 1709, 1641, 1614, 1583, 1506, 1458 cm⁻¹.

25 [α]_D²⁵+58.9±1.0° (c=1.012, MeOH)

Elemental Analysis (C₂₈H₃₅NO₄S·0.2H₂O)

Calcd.(%): C, 69.31; H, 7.35; N, 2.89; S, 6.61

Found(%): C, 69.21; H, 7.35; N, 3.03; S, 6.65

Compound I-215

mp.128-129°C

300MHz ¹H-NMR(CDCl₃) δ: 1.05(1H, m), 1.19-1.28(2H, m), 1.41-1.46(2H, m),
5 1.56-1.79(4H, m), 2.00-2.15(5H, m), 2.34(2H, t, J=7.2Hz), 2.51(1H, s), 3.80(1H,
m), 3.84(3H, s), 4.33(2H, s), 5.29-5.42(2H, m), 5.94(1H, d, J=6.9Hz), 6.83(1H, d,
J=3.6Hz), 7.01(1H, dd, J=2.7 and 9.0Hz), 7.11(1H, d, J=2.7Hz), 7.21(1H, s),
7.36(1H, d, J=3.6Hz), 7.72(1H, d, J=9.0Hz).

IR(CHCl₃): 3516, 3446, 3427, 1739, 1709, 1643, 1601, 1543, 1506, 1458, 1427

10 cm⁻¹.

[α]_D²⁵+55.7±1.0° (c=1.008, MeOH)

Elemental Analysis (C₂₉H₃₃NO₄S₂)

Calcd.(%): C, 66.51; H, 6.35; N, 2.67; S, 12.25

Found(%): C, 66.41; H, 6.30; N, 2.96; S, 12.15

15 Compound I-216

300MHz ¹H-NMR(CDCl₃) δ: 1.04(1H, m), 1.16-1.29(2H, m), 1.39-1.46(2H, m),
1.55-1.79(4H, m), 1.98-2.19(5H, m), 2.34(2H, t, J=7.2Hz), 2.51(1H, m), 3.80(1H,
m), 3.87 and 4.20(each 2H, each s), 5.28-5.40(2H, m), 5.93(1H, d, J=8.1Hz),
6.81(1H, d, J=3.9Hz), 7.24-7.39(5H, m), 7.53(1H, d, J=7.2Hz), 7.71-7.77(2H,
20 m).

IR(CHCl₃): 3516, 3446, 3427, 1739, 1709, 1643, 1543, 1506, 1456 cm⁻¹.

[α]_D²⁵+56.7±1.0° (c=1.000, MeOH)

Elemental Analysis (C₃₃H₃₅NO₃S·0.1H₂O)

Calcd.(%): C, 75.14; H, 6.73; N, 2.66; S, 6.08

25 Found(%): C, 75.14; H, 6.80; N, 2.74; S, 5.83

Compound I-217

300MHz ¹H-NMR(CDCl₃) δ: 1.07(1H, m), 1.19-1.32(2H, m), 1.40-1.48(2H, m),

1.56-1.78(4H, m), 2.00-2.21(5H, m), 2.34(2H, t, J=7.5Hz), 2.54(1H, m), 3.13-3.24(4H, m), 3.85(1H, m), 4.13(2H, s), 5.28-5.42(2H, m), 6.17(1H, d, J=7.2Hz), 7.06-7.17(4H, m), 7.22(1H, d, J=7.8Hz), 7.44(1H, dd, J=1.8 and 7.8Hz), 7.53(1H, d, J=1.8Hz).

5 IR(CHCl₃): 3518, 3446, 1739, 1709, 1651, 1570, 1518, 1491, 1456 cm⁻¹.

[α]_D²⁵+73.3 \pm 1.1° (c=1.000, MeOH)

Elemental Analysis (C₃₀H₃₅NO₃·0.2H₂O)

Calcd.(%): C, 78.13; H, 7.44; N, 3.04

Found(%): C, 78.25; H, 7.76; N, 3.29

10 Compound I-218

300MHz ¹H-NMR(CDCl₃) δ : 1.05(1H, m), 1.18-1.30(2H, m), 1.39-1.48(2H, m), 1.54-1.81(4H, m), 1.98-2.20(5H, m), 2.34(2H, t, J=7.2Hz), 2.51(1H, m), 3.80(1H, m), 3.82, 3.85 and 3.87(each 3H, each s), 4.07(2H, s), 5.29-5.42(2H, m), 5.94(1H, d, J=7.5Hz), 6.62(1H, d, J=8.7Hz), 6.76(1H, d, J=3.6Hz), 6.85(1H, d, J=8.7Hz), 7.35(1H, d, J=3.6Hz).

15 IR(CHCl₃): 3514, 3446, 3427, 1739, 1709, 1641, 1603, 1543, 1495, 1468, 1277, 1259, 1097 cm⁻¹.

[α]_D²⁶+54.8 \pm 1.0° (c=1.013, MeOH)

Elemental Analysis (C₂₉H₃₇NO₃S·0.2H₂O)

20 Calcd.(%): C, 65.56; H, 7.10; N, 2.64; S, 6.04

Found(%): C, 65.54; H, 6.96; N, 2.74; S, 5.98

Compound I-219

300MHz ¹H-NMR(CDCl₃) δ : 1.04(1H, m), 1.17-1.30(2H, m), 1.38-1.48(2H, m), 1.54-1.81(4H, m), 1.98-2.16(5H, m), 2.17 and 2.29(each 3H, each s), 2.34(2H, t, J=7.2Hz), 2.51(1H, m), 3.80(1H, m), 4.14(2H, s), 5.29-5.41(2H, m), 5.93(1H, d, J=7.5Hz), 6.68(1H, td, J=0.9 and 3.6Hz), 7.35(1H, d, J=3.6Hz).

25 IR(CHCl₃): 3514, 3446, 3427, 2669, 1739, 1709, 1641, 1543, 1506, 1458 cm⁻¹.

$[\alpha]_{\text{D}}^{26} + 66.9 \pm 1.1^\circ$ ($c=1.009$, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{36}\text{NO}_3\text{S}$)

Calcd.(%): C, 72.22; H, 7.58; N, 3.01; S, 6.89

Found(%): C, 71.93; H, 7.58; N, 3.12; S, 6.74

5 Compound I-220

mp. 131-133°C

300MHz ^1H -NMR(CDCl_3) δ : 1.06(1H, m), 1.18-1.31(2H, m), 1.40-1.48(2H, m),
1.56-1.82(4H, m), 2.00-2.21(5H, m), 2.35(2H, t, $J=7.5\text{Hz}$), 2.52(1H, m), 3.82(1H,
m), 3.83(3H, s), 3.84(6H, s), 4.07(2H, s), 5.30-5.42(2H, m), 5.95(1H, d, $J=7.5\text{Hz}$),
6.45(2H, s), 6.79(1H, d, $J=3.6\text{Hz}$), 7.36(1H, d, $J=3.6\text{Hz}$).

IR(CHCl_3): 3516, 3446, 3427, 1739, 1709, 1643, 1593, 1543, 1506, 1462, 1421,
1331, 1240, 1130 cm^{-1} .

$[\alpha]_{\text{D}}^{24} + 57.5 \pm 1.0^\circ$ ($c=1.007$, MeOH)

Elemental Analysis ($\text{C}_{29}\text{H}_{37}\text{NO}_6\text{S}$)

Calcd.(%): C, 66.01; H, 7.07; N, 2.65; S, 6.08

Found(%): C, 65.84; H, 6.93; N, 2.71; S, 6.06

Compound I-221

300MHz ^1H -NMR(CDCl_3) δ : 1.05(1H, m), 1.17-1.30(2H, m), 1.39-1.48(2H, m),
1.54-1.80(4H, m), 1.98-2.20(5H, m), 2.34(2H, t, $J=7.5\text{Hz}$), 2.51(1H, m), 3.81(1H,
m), 4.08(2H, s), 5.29-5.42(2H, m), 5.95(2H, s), 5.98(1H, d, $J=7.5\text{Hz}$), 6.68-
6.80(4H, m), 7.35(1H, d, $J=3.9\text{Hz}$).

IR(CHCl_3): 3516, 3446, 3427, 1741, 1709, 1641, 1543, 1504, 1460, 1252, 1063
 cm^{-1} .

$[\alpha]_{\text{D}}^{24} + 62.7 \pm 1.0^\circ$ ($c=1.006$, MeOH)

25 Elemental Analysis ($\text{C}_{27}\text{H}_{31}\text{NO}_5\text{S}$)

Calcd.(%): C, 67.34; H, 6.49; N, 2.91; S, 6.66

Found(%): C, 67.12; H, 6.37; N, 2.98; S, 6.55

Compound I-222

300MHz ^1H -NMR(CDCl_3) δ : 1.08(1H, m), 1.24-1.28(2H, m), 1.41-1.45(2H, m),
1.56-1.78(4H, m), 1.97-2.20(5H, m), 2.14(3H, s), 2.33(2H, t, $J=7.2\text{Hz}$), 2.51(1H,
m), 3.77(1H, m), 4.06(2H, s), 5.28-5.42(2H, m), 6.16(1H, d, $J=7.2\text{Hz}$), 6.74(1H,
5 d, $J=3.6\text{Hz}$), 6.96(1H, d, $J=7.5\text{Hz}$), 7.24(1H, t, $J=8.7\text{Hz}$), 7.35-7.38(3H, m),
7.74(1H, br s).

IR(KBr): 3309, 1707, 1672, 1614, 1547, 1523, 1489, 1441, 1371, 1319 cm^{-1} .

$[\alpha]_{\text{D}}^{26}+57.7\pm 1.0^\circ$ ($c=1.012$, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{34}\text{N}_2\text{O}_4\text{S}\cdot 0.4\text{H}_2\text{O}$)

10 Calcd.(%): C, 67.01; H, 6.99; N, 5.58; S, 6.39

Found(%): C, 66.98; H, 6.72; N, 5.47; S, 6.27

Compound I-223

300MHz ^1H -NMR(CDCl_3) δ : 1.05(1H, m), 1.22-1.28(2H, m), 1.42-1.46(2H, m),
1.55-1.75(4H, m), 2.02-2.22(5H, m), 2.34(2H, t, $J=7.5\text{Hz}$), 2.51(1H, m), 2.99(3H,
15 s), 3.81(1H, m), 4.11(2H, s), 5.29-5.45(2H, m), 6.04(1H, d, $J=7.2\text{Hz}$), 6.78 (1H, d,
 $J=3.6\text{Hz}$), 7.04-7.06(2H, m), 7.16(1H, m), 7.25(1H, br s), 7.29(1H, t, $J=7.8\text{Hz}$),
7.36 (1H, d, $J=3.6\text{Hz}$).

IR(CHCl_3): 3512, 3444, 3427, 3371, 1709, 1639, 1608, 1545, 1508, 1475, 1458,
1389, 1335, 1151 cm^{-1} .

20 $[\alpha]_{\text{D}}^{24}+55.0\pm 1.0^\circ$ ($c=1.003$, MeOH)

Elemental Analysis ($\text{C}_{27}\text{H}_{34}\text{N}_2\text{O}_5\text{S}_2\cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 60.69; H, 6.49; N, 5.24; S, 12.00

Found(%): C, 60.70; H, 6.44; N, 5.15; S, 11.56

Compound I-224

25 300MHz ^1H -NMR(CDCl_3) δ : 1.07(1H, m), 1.22-1.28(2H, m), 1.42-1.53(2H, m),
1.57-1.74(4H, m), 2.00-2.24(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.52(1H, m), 3.81(1H,
m), 4.33(2H, s), 5.29-5.42(2H, m), 5.98(1H, d, $J=7.8\text{Hz}$), 6.86, 6.88 and

7.14(each 1H, each d, each J=3.6Hz), 7.22-7.37(4H, m), 7.53-7.56(2H, m).

Compound I-225

300MHz ^1H -NMR(CDCl_3) δ : 1.05(1H, m), 1.17-1.30(2H, m), 1.39-1.48(2H, m),
1.54-1.81(4H, m), 1.98-2.20(5H, m), 2.35(2H, t, J=7.5Hz), 2.51(1H, m), 3.81(1H,
5 m), 4.08(2H, s), 4.23-4.30(4H, m), 5.29-5.42(2H, m), 5.95(1H, d, J=7.2Hz),
6.71-6.80(4H, m), 7.34(1H, d, J=3.6Hz).

IR(CHCl_3): 3514, 3446, 3427, 1739, 1709, 1641, 1603, 1543, 1506, 1475, 1456,
1284, 1090 cm^{-1} .

$[\alpha]_{\text{D}}^{24.5} + 58.9 \pm 1.0^\circ$ (c=1.013, MeOH)

10 Elemental Analysis ($\text{C}_{28}\text{H}_{33}\text{NO}_6\text{S}$)

Calcd.(%): C, 67.85; H, 6.71; N, 2.83; S, 6.47

Found(%): C, 68.01; H, 6.72; N, 2.97; S, 6.50

Compound I-226

300MHz ^1H -NMR(CDCl_3) δ : 1.05(1H, m), 1.18-1.30(2H, m), 1.38-1.47(2H, m),
15 1.54-1.81(4H, m), 1.98-2.20(5H, m), 2.31(3H, s), 2.34(2H, t, J=7.5Hz), 2.51(1H,
m), 3.70(3H, s), 3.80(1H, m), 4.16(2H, s), 5.29-5.42(2H, m), 5.95(1H, d,
J=7.2Hz), 6.78(1H, d, J=3.6Hz), 6.96-7.11(3H, m), 7.37(1H, d, J=3.6Hz).

IR(CHCl_3): 3514, 3446, 3427, 2669, 1709, 1641, 1543, 1506, 1473, 1458, 1259,
1011 cm^{-1} .

20 $[\alpha]_{\text{D}}^{24} + 62.7 \pm 1.0^\circ$ (c=1.009, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{35}\text{NO}_4\text{S}$)

Calcd.(%): C, 69.82; H, 7.32; N, 2.91; S, 6.66

Found(%): C, 69.55; H, 7.27; N, 3.09; S, 6.55

Compound I-227

25 300MHz ^1H -NMR(CDCl_3) δ : 1.07(1H, m), 1.24-1.28(2H, m), 1.41-1.46(2H, m),
1.56-1.79(4H, m), 2.00-2.17(5H, m), 2.16(3H, s), 2.33(2H, t, J=7.5Hz), 2.51(1H,
m), 3.79(1H, m), 4.08(2H, s), 5.28-5.42(2H, m), 6.05(1H, d, J=7.5Hz), 6.75(1H,

d, J=3.6Hz), 7.16(2H, d, J=8.1Hz), 7.37(1H, d, J=3.6Hz), 7.43(2H, d, J=8.1Hz), 7.53(1H, br s).

IR(CHCl₃): 3512, 3437, 1707, 1639, 1543, 1516, 1410 cm⁻¹.

[α]_D^{24.5}+60.7±1.0° (c=1.012, MeOH)

5 Elemental Analysis (C₂₈H₃₄N₂O₄S·0.5H₂O)

Calcd.(%): C, 67.77; H, 7.00; N, 5.56; S, 6.37

Found(%): C, 66.84; H, 6.91; N, 5.56; S, 6.26

Compound I-228

300MHz ¹H-NMR(CDCl₃) δ: 1.06(1H, m), 1.22-1.29(2H, m), 1.41-1.46(2H, m),

10 1.58-1.76(4H, m), 2.01-2.17(5H, m), 2.34(2H, t, J=7.5Hz), 2.51(1H, m), 2.99(3H, s), 3.80(1H, m), 4.11(2H, s), 5.29-5.43(2H, m), 6.01(1H, d, J=7.5Hz), 6.78(1H, d, J=3.6Hz), 6.86(1H, br s), 7.17-7.23(4H, m), 7.36(1H, d, J=3.6Hz).

IR(CHCl₃): 3510, 3444, 3427, 3371, 1709, 1639, 1543, 1510, 1456, 1389, 1338, 1155 cm⁻¹.

15 [α]_D^{24.5}+56.5±1.0° (c=0.953, MeOH)

Elemental Analysis (C₂₇H₃₄N₂O₅S₂·0.1H₂O)

Calcd.(%): C, 60.90; H, 6.47; N, 5.26; S, 12.04

Found(%): C, 61.06; H, 6.45; N, 5.29; S, 11.52

Compound I-229

20 mp.103-105°C

300MHz ¹H-NMR(CDCl₃) δ: 1.02(1H, m), 1.15-1.27(2H, m), 1.37-1.45(2H, m),

1.53-1.77(4H, m), 1.96-2.18(5H, m), 2.33(2H, t, J=7.5Hz), 2.49(1H, m), 3.79(1H, m), 4.40(2H, s), 5.27-5.39(2H, m), 5.94(1H, d, J=7.8Hz), 6.89(1H, d, J=3.9Hz), 7.32-7.37(2H, m), 7.43-7.48(3H, m), 7.84(1H, m), 8.08(1H, d, J=6.9Hz), 8.15(1H, m).

25 IR(CHCl₃): 3514, 3444, 3427, 2667, 1739, 1709, 1643, 1543, 1506, 1458, 1444 cm⁻¹.

$[\alpha]_D^{24.5} + 58.9 \pm 1.0^\circ$ ($c=1.006$, MeOH)

Elemental Analysis ($C_{32}H_{38}NO_3S_2$)

Calcd.(%): C, 70.68; H, 6.12; N, 2.58; S, 11.79

Found(%): C, 70.52; H, 6.11; N, 2.67; S, 11.72

5 Compound I-230

mp. 86-87°C

300MHz 1H -NMR($CDCl_3$) δ : 1.02(1H, m), 1.16-1.28(2H, m), 1.37-1.45(2H, m),
1.54-1.77(4H, m), 1.97-2.17(5H, m), 2.32(2H, t, $J=7.5$ Hz), 2.49(1H, m), 3.78(1H,
m), 3.79 and 4.26(each 2H, each s), 5.27-5.39(2H, m), 5.93(1H, d, $J=7.2$ Hz),
6.78(1H, d, $J=3.9$ Hz), 7.18(1H, d, $J=7.2$ Hz), 7.29(1H, m), 7.34-7.40(3H, m),
7.52(1H, d, $J=7.2$ Hz), 7.72(1H, d, $J=7.5$ Hz), 7.78(1H, d, $J=7.2$ Hz).

IR($CHCl_3$): 3514, 3446, 3427, 2669, 1709, 1641, 1543, 1506, 1456 cm^{-1} .

$[\alpha]_D^{24.5} + 59.2 \pm 1.0^\circ$ ($c=1.006$, MeOH)

Elemental Analysis ($C_{33}H_{35}NO_3S$)

15 Calcd.(%): C, 75.40; H, 6.71; N, 2.66; S, 6.10

Found(%): C, 75.33; H, 6.73; N, 2.75; S, 6.06

Compound I-231

300MHz 1H -NMR($CDCl_3$) δ : 1.04(1H, m), 1.16-1.30(2H, m), 1.38-1.46(2H, m),
1.54-1.81(4H, m), 1.98-2.16(5H, m), 2.21 and 2.50(each 3H, each s), 2.34(2H, t,
20 $J=7.2$ Hz), 2.51(1H, m), 3.66(3H, s), 3.80(1H, m), 4.13(2H, s), 5.29-5.42(2H, m),
5.93(1H, d, $J=6.9$ Hz), 6.78(1H, d, $J=3.6$ Hz), 6.89 and 6.96(each 1H, each d,
each $J=7.5$ Hz), 7.36(1H, d, $J=3.6$ Hz).

IR($CHCl_3$): 3516, 3446, 3425, 2669, 1709, 1641, 1545, 1506, 1458, 1263, 1084,
1009 cm^{-1} .

25 $[\alpha]_D^{24} + 61.8 \pm 1.0^\circ$ ($c=1.006$, MeOH)

Elemental Analysis ($C_{29}H_{37}NO_4S \cdot 0.2H_2O$)

Calcd.(%): C, 69.76; H, 7.55; N, 2.81; S, 6.42

Found(%): C, 69.80; H, 7.59; N, 2.97; S, 6.34

Compound I-232

300MHz ^1H -NMR(CDCl_3) δ : 1.02(1H, m), 1.16-1.27(2H, m), 1.37-1.45(2H, m),
1.53-1.77(4H, m), 1.96-2.15(5H, m), 2.33(2H, t, $J=7.5\text{Hz}$), 2.50(1H, m), 3.79(1H,
5 m), 4.50(2H, s), 5.27-5.40(2H, m), 5.94(1H, d, $J=7.5\text{Hz}$), 6.88(1H, d, $J=3.9\text{Hz}$),
7.29-7.38(4H, m), 7.47(1H, m), 7.58(1H, d, $J=8.4\text{Hz}$), 7.86(1H, m), 7.95(1H, d,
 $J=7.8\text{Hz}$).

IR(CHCl_3): 3512, 3444, 3427, 2669, 1739, 1708, 1641, 1543, 1506, 1475, 1452,
1423 cm^{-1} .

10 $[\alpha]_{\text{D}}^{24}+58.5\pm 1.0^\circ$ ($c=1.006$, MeOH)

Elemental Analysis ($\text{C}_{82}\text{H}_{33}\text{NO}_4\text{S}\cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 72.34; H, 6.34; N, 2.64; S, 6.04

Found(%): C, 72.36; H, 6.16; N, 2.72; S, 5.94

Compound I-233

15 mp.125-126°C

300MHz ^1H -NMR(CDCl_3) δ : 1.05(1H, m), 1.18-1.28(2H, m), 1.41-1.45(2H, m),
1.57-1.78(4H, m), 2.00-2.20(5H, m), 2.33(2H, t, $J=7.4\text{Hz}$), 2.51(1H, s), 3.80(1H,
m), 4.05(2H, s), 5.28-5.42(2H, m), 5.98(1H, d, $J=6.6\text{Hz}$), 6.76(1H, d, $J=3.6\text{Hz}$),
6.80 and 7.09(each 2H, each d, $J=8.4\text{Hz}$), 7.37(1H, d, $J=3.6\text{Hz}$).

20 IR(KBr): 3354, 3132, 2688, 1703, 1616, 1599, 1549, 1514, 1458, 1250 cm^{-1} .

$[\alpha]_{\text{D}}^{25}+67.7\pm 1.1^\circ$ ($c=1.001$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{31}\text{NO}_4\text{S}$)

Calcd.(%): C, 68.85; H, 6.89; N, 3.09; S, 7.07

Found(%): C, 69.12; H, 6.95; N, 3.10; S, 7.12

25 Compound II-2

300MHz ^1H -NMR(CDCl_3) δ : 0.89(1H, d, $J=10.2\text{Hz}$), 1.05 and 1.19(each 3H, each
s), 1.50-2.44(14H, m), 4.15(1H, m), 5.31-5.50(2H, m), 6.31(1H, d, $J=8.1\text{Hz}$),

7.00(1H, d, J=1.8Hz), 7.42-7.47(2H, m), 7.54(1H, d, J=1.8Hz), 7.56(1H, m),
7.76-7.79(2H, m), 8.29(1H, s).

IR(CHCl₃): 3509, 3446, 3360, 3108, 1708, 1639, 1515, 1448, 1330, 1164 cm⁻¹.

[α]_D²⁰+39.0±0.8° (c=1.006, MeOH)

5 Elemental Analysis (C₂₇H₃₄N₂O₅S₂·0.2H₂O)

Calcd.(%): C, 60.09; H, 6.54; N, 5.19; S, 11.88

Found(%): C, 60.07; H, 6.48; N, 5.31; S, 11.92

Compound II-3

300MHz ¹H-NMR(CDCl₃) δ : 0.73(1H, d, J=10.2Hz), 1.06 and 1.16(each 3H, each
10 s), 1.43-2.36(14H, m), 4.07(1H, m), 5.28-5.49(2H, m), 6.37(1H, d, J=8.7Hz),
7.28 and 7.33(each 1H, each d, each J=1.8Hz), 7.38-7.43(2H, m), 7.50(1H, m),
7.96-7.99(2H, m).

IR(CHCl₃): 3440, 3254, 3096, 3062, 1708, 1643, 1560, 1530, 1298 cm⁻¹.

[α]_D²⁰+49.0±0.9° (c=1.008, MeOH)

15 Elemental Analysis (C₂₈H₃₄N₂O₄S·0.4H₂O)

Calcd.(%): C, 67.01; H, 6.99; N, 5.58; S, 6.39

Found(%): C, 66.96; H, 7.04; N, 5.67; S, 6.32

Compound II-4

300MHz ¹H-NMR(CDCl₃) δ : 0.94(1H, d, J=10.2Hz), 1.08 and 1.21(each 3H, each
20 s), 1.50-2.43(14H, m), 4.12(2H, s), 4.22(1H, m), 5.33-5.49(2H, m), 6.06(1H, d,
J=8.7Hz), 7.04(1H, d, J=1.2Hz), 7.22-7.34(2H, m), 7.63(1H, d, J=1.2Hz).

IR(CHCl₃): 3517, 3451, 3087, 3065, 2670, 1708, 1708, 1647, 1549, 1508 cm⁻¹.

[α]_D^{21.5}+41.9±0.8° (c=1.015, MeOH)

Elemental Analysis (C₂₈H₃₅NO₃S)

25 Calcd.(%): C, 72.22; H, 7.58; N, 3.01; S, 6.89

Found(%): C, 72.07; H, 7.57; N, 3.21; S, 6.77

Compound II-5

300MHz ^1H -NMR(CDCl_3) δ : 0.98(1H, d, $J=10.2\text{Hz}$), 1.14 and 1.24(each 3H, each s), 1.54-2.48(14H, m), 4.30(1H, m), 5.35-5.52(2H, m), 6.26(1H, d, $J=8.7\text{Hz}$), 6.38 and 7.13 (each 2H, each t, $J=2.1\text{Hz}$), 7.44 and 7.79(each 2H, each d, $J=8.4\text{Hz}$).

5 IR(CHCl_3): 3453, 2662, 1739, 1708, 1652, 1609, 1500, 1333 cm^{-1} .

$[\alpha]_{\text{D}}^{22}+65.2\pm 1.1^\circ$ ($c=1.006$, MeOH)

Elemental Analysis ($\text{C}_{27}\text{H}_{34}\text{N}_2\text{O}_3\cdot 0.3\text{H}_2\text{O}$)

Calcd.(%): C, 73.71; H, 7.93; N, 6.37

Found(%): C, 73.85; H, 7.88; N, 6.37

10 Compound II-6

300MHz ^1H -NMR(CDCl_3) δ : 0.95(1H, d, $J=10.2\text{Hz}$), 1.10 and 1.22(each 3H, each s), 1.52-2.42(14H, m), 4.25(1H, m), 5.34-5.51(2H, m), 6.35(1H, d, $J=8.7\text{Hz}$), 7.07-7.15(3H, m), 7.21-7.26(2H, m), 7.73 and 7.77(each 2H, each d, each $J=8.7\text{Hz}$).

15 IR(CHCl_3): 3518, 3446, 3365, 3249, 2673, 1709, 1655, 1516, 1348, 1167 cm^{-1} .

$[\alpha]_{\text{D}}^{21.5}+56.1\pm 0.9^\circ$ ($c=1.000$, MeOH)

Elemental Analysis ($\text{C}_{29}\text{H}_{36}\text{N}_2\text{O}_5\text{S}\cdot 0.6\text{H}_2\text{O}$)

Calcd.(%): C, 65.05; H, 7.00; N, 5.23; S, 5.99

Found(%): C, 65.07; H, 6.94; N, 5.37; S, 6.03

20 Compound II-7

300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=10.5\text{Hz}$), 1.09 and 1.21(each 3H, each s), 1.50-2.44(14H, m), 4.24(1H, m), 5.32-5.48(2H, m), 6.24(1H, d, $J=8.7\text{Hz}$), 7.17 and 7.60(each 2H, each d, each $J=8.7\text{Hz}$), 7.41-7.46(2H, m), 7.54(1H, m), 7.80-7.84(2H, m).

25 IR(CHCl_3): 3510, 3451, 3371, 3139, 1709, 1647, 1609, 1496, 1163 cm^{-1} .

$[\alpha]_{\text{D}}^{22.5}+47.1\pm 0.9^\circ$ ($c=1.006$, MeOH)

Elemental Analysis ($\text{C}_{29}\text{H}_{36}\text{N}_2\text{O}_5\text{S}\cdot 0.4\text{H}_2\text{O}$)

Calcd.(%): C, 65.49; H, 6.97; N, 5.27; S, 6.03

Found(%): C, 65.51; H, 6.87; N, 5.39; S, 5.89

Compound II-8

300MHz ^1H -NMR(CDCl_3) δ : 0.96(1H, d, $J=10.5\text{Hz}$), 1.09 and 1.22(each 3H, each s), 1.52-2.44(14H, m), 4.26(1H, m), 5.33-5.49(2H, m), 6.26(1H, d, $J=8.4\text{Hz}$), 6.31 and 7.15(each 2H, each t, each $J=2.1\text{Hz}$), 7.81 and 7.89(each 2H, each d, each $J=8.4\text{Hz}$).

IR(CHCl_3): 3514, 3446, 3144, 1708, 1663, 1514, 1377, 1173 cm^{-1} .

$[\alpha]_{\text{D}}^{25}+64.1\pm 0.9^\circ$ ($c=1.000$, MeOH)

10 Elemental Analysis ($\text{C}_{27}\text{H}_{34}\text{N}_2\text{O}_5\text{S}\cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 64.57; H, 6.90; N, 5.58; S, 6.38

Found(%): C, 64.50; H, 6.97; N, 5.71; S, 6.28

Compound II-9

mp.156-157°C

15 300MHz ^1H -NMR(CDCl_3) δ : 1.00(1H, d, $J=10.2\text{Hz}$), 1.17 and 1.25(each 3H, each s), 1.57-2.51(14H, m), 4.31(1H, m), 5.34-5.54(2H, m), 6.37(1H, d, $J=9.3\text{Hz}$), 7.33-7.47(3H, m), 7.61(1H, s), 7.64(1H, m), 7.70-7.73(2H, m), 7.87(1H, d, $J=8.4\text{Hz}$), 8.15(1H, d, $J=1.2\text{Hz}$).

IR(CHCl_3): 3518, 3452, 1741, 1709, 1649, 1510 cm^{-1} .

20 $[\alpha]_{\text{D}}^{25}+67.2\pm 2.1^\circ$ ($c=0.503$, MeOH)

Elemental Analysis ($\text{C}_{31}\text{H}_{35}\text{NO}_3\text{S}\cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 73.95; H, 7.05; N, 2.78; S, 6.37

Found(%): C, 73.94; H, 7.08; N, 3.04; S, 6.53

Compound II-10

25 300MHz ^1H -NMR(CDCl_3) δ : 0.96(1H, d, $J=10.5\text{Hz}$), 1.11 and 1.23(each 3H, each s), 1.54-2.49(14H, m), 4.25(1H, m), 5.35-5.56(2H, m), 6.33(2H, t, $J=2.4\text{Hz}$), 6.56(1H, d, $J=7.8\text{Hz}$), 7.17(2H, t, $J=2.4\text{Hz}$), 7.58(1H, t, $J=7.8\text{Hz}$), 7.93(1H, m),

8.04(1H, d, J=7.8Hz), 8.24(1H, m).

IR(CHCl₃): 3513, 3389, 3144, 2669, 1726, 1709, 1659, 1515, 1470, 1455, 1375 cm⁻¹.

[α]_D²⁵+54.0±0.9° (c=1.008, MeOH)

5 Elemental Analysis (C₂₇H₃₄N₂O₅S·0.2H₂O)

Calcd.(%): C, 64.46; H, 6.90; N, 5.53; S, 6.38

Found(%): C, 64.45; H, 6.89; N, 5.75; S, 6.42

Compound II-11

300MHz ¹H-NMR(CDCl₃) δ : 0.96(1H, d, J=10.2Hz), 1.10 and 1.23(each 3H, each s), 1.52-2.42(14H, m), 2.29(3H, t), 4.26(1H, m), 5.35-5.49(2H, m), 5.96(1H, brs), 6.19(1H, t, J=3.2Hz), 6.26(1H, d, J=8.1Hz), 7.25(1H, m), 7.81(4H, s).

IR(CHCl₃): 3511, 3446, 3152, 1708, 1662, 1514, 1485, 1368, 1164 cm⁻¹.

[α]_D²⁷+59.4±1.0° (c=1.006, MeOH)

Elemental Analysis (C₂₈H₃₆N₂O₅S)

15 Calcd.(%): C, 65.60; H, 7.08; N, 5.46; S, 6.25

Found(%): C, 65.41; H, 7.00; N, 5.67; S, 6.24

Compound II-12

300MHz ¹H-NMR(CDCl₃) δ : 0.97(1H, d, J=10.5Hz), 1.03 and 1.22(each 3H, each s), 1.452-2.46(14H, m), 4.26(1H, m), 5.33-5.50(2H, m), 6.20(2H, t, J=2.1Hz), 6.22(1H, d, J=8.1Hz), 6.68(2H, t, J=2.1Hz), 7.15 and 7.67(each 2H, each d, each J=8.1Hz).

20 IR(CHCl₃): 3511, 3452, 3103, 2666, 1709, 1652, 1523, 1496 cm⁻¹.

[α]_D²³+57.7±1.0° (c=1.010, MeOH)

Elemental Analysis (C₂₈H₃₆N₂O₈·0.1H₂O)

25 Calcd.(%): C, 74.67; H, 8.10; N, 6.22

Found(%): C, 74.69; H, 8.21; N, 6.38

Compound II-13

300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=10.2\text{Hz}$), 1.06 and 1.20(each 3H, each s), 1.49-2.40(14H, m), 4.21(1H, m), 5.31-5.45(2H, m), 6.19(1H, d, $J=8.4\text{Hz}$), 6.88(1H, d, $J=3.6\text{Hz}$), 7.22-7.35(2H, m), 7.52-7.55(2H, m), 7.74 and 7.91(each 2H, each d, each $J=8.4\text{Hz}$), 7.98(1H, d, $J=8.4\text{Hz}$).

5 IR(CHCl_3): 3481, 3440, 3145, 3116, 2661, 1709, 1660, 1516, 1485, 1446, 1377, 1261, 1178, 1130 cm^{-1} .

$[\alpha]_{\text{D}}^{26} +56.6 \pm 1.0^\circ$ ($c=1.000$, MeOH)

Elemental Analysis ($\text{C}_{31}\text{H}_{36}\text{N}_2\text{O}_5\text{S}\cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 67.64; H, 6.63; N, 5.09; S, 5.82

10 Found(%): C, 67.68; H, 6.72; N, 5.35; S, 5.73

Compound II-14

300MHz ^1H -NMR(CDCl_3) δ : 0.92(1H, d, $J=10.2\text{Hz}$), 1.09 and 1.21(each 3H, each s), 1.53-2.47(14H, m), 4.17(1H, m), 5.35-5.55(2H, m), 6.35 and 7.17(each 2H, each t, each $J=2.1\text{Hz}$), 6.38(1H, d, $J=8.7\text{Hz}$), 8.09 and 8.17(each 1H, each d, each $J=1.5\text{Hz}$).

15 IR(CHCl_3): 3510, 3409, 3144, 3107, 1727, 1709, 1657, 1538, 1503, 1456, 1387, 1166 cm^{-1} .

$[\alpha]_{\text{D}}^{26.5} +46.1 \pm 0.9^\circ$ ($c=1.005$, MeOH)

Elemental Analysis ($\text{C}_{25}\text{H}_{32}\text{N}_2\text{O}_5\text{S}_2\cdot 0.2\text{H}_2\text{O}$)

20 Calcd.(%): C, 59.08; H, 6.43; N, 5.51; S, 12.62

Found(%): C, 59.10; H, 6.45; N, 5.69; S, 12.58

Compound II-15

300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J=10.2\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.50-2.41(14H, m), 4.20(1H, m), 5.35-5.47(2H, m), 6.16(1H, d, $J=8.7\text{Hz}$), 6.33 and 7.16(each 2H, each t, each $J=2.4\text{Hz}$), 7.30 and 7.56(each 1H, each d, each $J=3.9\text{Hz}$).

IR(CHCl_3): 3515, 3446, 3144, 3100, 1708, 1658, 1529, 1504, 1456, 1385, 1167

cm⁻¹.

$[\alpha]_{\text{D}}^{26.5} + 54.1 \pm 0.9^\circ$ (c=1.004, MeOH)

Elemental Analysis (C₂₅H₃₂N₂O₅S₂·0.2H₂O)

Calcd.(%): C, 59.08; H, 6.43; N, 5.51; S, 12.62

5 Found(%): C, 59.12; H, 6.36; N, 5.57; S, 12.59

Compound II-16

300MHz ¹H-NMR(CDCl₃) δ: 0.95(1H, d, J=10.2Hz), 1.09 and 1.22(each 3H, each s), 1.52-2.45(14H, m), 4.24(1H, m), 4.63(2H, s), 5.34-5.50(2H, m), 6.25-6.27(2H, m), 6.40(1H, d, J=8.4Hz), 7.25(1H, dd, J=1.8 and 3.0Hz), 7.80 and 7.85(each 2H, each d, each J=8.7Hz).

10 IR(CHCl₃): 3581, 3518, 3445, 3149, 2666, 1709, 1661, 1515, 1472, 1371, 1182, 1150 cm⁻¹.

$[\alpha]_{\text{D}}^{27} + 58.1 \pm 1.0^\circ$ (c=1.007, MeOH)

Elemental Analysis (C₂₈H₃₆N₂O₅S)

15 Calcd.(%): C, 63.61; H, 6.86; N, 5.30; S, 6.07

Found(%): C, 63.50; H, 6.84; N, 5.44; S, 5.89

Compound II-17

mp.119-121°C

20 300MHz ¹H-NMR(CDCl₃) δ: 0.97(1H, d, J=10.2Hz), 1.11 and 1.24(each 3H, each s), 1.53-2.49(14H, m), 4.29(1H, m), 5.39-5.57(2H, m), 6.37 and 7.22(each 2H, each t, each J=2.1Hz), 7.13(1H, d, J=8.4Hz), 7.50 and 7.93(each 1H, each d, each J=3.9Hz).

IR(Nujol): 3365, 3145, 3100, 1739, 1621, 1548, 1405, 1367, 1187 cm⁻¹.

$[\alpha]_{\text{D}}^{26.5} + 45.5 \pm 0.8^\circ$ (c=1.012, MeOH)

25 Elemental Analysis (C₂₅H₃₂N₂O₅S₂)

Calcd.(%): C, 59.74; H, 6.02; N, 5.57; S, 12.76

Found(%): C, 59.56; H, 6.33; N, 5.64; S, 12.76

Compound II-18

300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J=10.2\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.50-2.41(14H, m), 4.21(1H, m), 5.34-5.48(2H, m), 6.21(1H, d, $J=8.4\text{Hz}$), 7.36 and 7.63(each 1H, each d, each $J=3.9\text{Hz}$), 7.70(1H, dd, $J=1.5$ and 5.1Hz),
5 7.75(1H, dd, $J=1.5$ and 3.9Hz).

IR(CHCl_3): 3516, 3446, 3097, 1708, 1656, 1529, 1504, 1337, 1153 cm^{-1} .

$[\alpha]_{\text{D}}^{25}+54.1\pm0.9^\circ$ ($c=1.000$, MeOH)

Elemental Analysis ($\text{C}_{25}\text{H}_{31}\text{NO}_5\text{S}_3$)

Calcd.(%): C, 57.56; H, 5.99; N, 2.68; S, 18.44

10 Found(%): C, 57.33; H, 5.95; N, 2.68; S, 18.38

Compound II-19

mp.132-133°C

300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J=10.2\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.54-2.44(14H, m), 4.19(1H, m), 5.33-5.50(2H, m), 6.03(1H, d, $J=8.7\text{Hz}$),
15 6.52(1H, dd, $J=1.5$ and 3.3Hz), 7.11(1H, dd, $J=3.9$ and 4.8Hz), 7.17(1H, dd, $J=2.1$ and 3.3Hz), 7.70-7.72(2H, m), 7.74(1H, dd, $J=1.5$ and 3.9Hz).

IR(CHCl_3): 3510, 3448, 3143, 3099, 1733, 1708, 1650, 1572, 1507, 1473, 1387, 1179 cm^{-1} .

$[\alpha]_{\text{D}}^{24}+39.1\pm0.8^\circ$ ($c=1.003$, MeOH)

20 Elemental Analysis ($\text{C}_{25}\text{H}_{32}\text{N}_2\text{O}_5\text{S}_2$)

Calcd.(%): C, 59.50; H, 6.39; N, 5.55; S, 12.71

Found(%): C, 59.49; H, 6.46; N, 5.47; S, 12.70

Compound II-20

mp.165-166°C

25 300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J=10.2\text{Hz}$), 1.08 and 1.20(each 3H, each s), 1.50-2.45(14H, m), 4.17(1H, m), 5.33-5.51(2H, m), 6.04(1H, d, $J=8.4\text{Hz}$), 6.51(1H, dd, $J=1.5$ and 3.3Hz), 7.15(1H, dd, $J=2.4$ and 3.3Hz), 7.52-7.57(2H, m),

7.65(1H, m), 7.74(1H, dd, J=1.8 and 2.1Hz), 7.89-7.93(1H, m).

IR(CHCl₃): 3510, 3449, 3144, 1733, 1708, 1650, 1570, 1507, 1384, 1185, 1176 cm⁻¹.

[α]_D²⁴+33.8±0.7° (c=1.011, MeOH)

5 Elemental Analysis (C₂₇H₃₄N₂O₅S)

Calcd.(%): C, 65.04; H, 6.87; N, 5.62; S, 6.43

Found(%): C, 64.95; H, 6.68; N, 5.69; S, 6.40

Compound II-21

300MHz ¹H-NMR(CDCl₃) δ : 0.93(1H, d, J=10.2Hz), 1.07 and 1.21(each 3H, each

10 s), 1.49-2.41(14H, m), 4.19(1H, m), 5.33-5.47(2H, m), 5.99(1H, d, J=8.7Hz),

7.01(1H, dd, J=3.6 and 5.4Hz), 7.04 and 7.28(each 1H, each d, each J=3.6Hz),

7.29(1H, dd, J=1.2 and 3.6Hz), 7.43(1H, dd, J=1.2 and 5.4Hz).

IR(CHCl₃): 3518, 3449, 3430, 2672, 1708, 1646, 1530, 1500, 1421 cm⁻¹.

[α]_D²⁵+45.9±0.9° (c=1.010, MeOH)

15 Elemental Analysis (C₂₅H₃₁NO₃S₃)

Calcd.(%): C, 61.32; H, 6.38; N, 2.86; S, 19.64

Found(%): C, 61.17; H, 6.42; N, 3.00; S, 19.80

Compound II-22

300MHz ¹H-NMR(CDCl₃) δ : 0.93(1H, d, J=10.2Hz), 1.07 and 1.21(each 3H, each

20 s), 1.49-2.41(14H, m), 2.46(3H, d, J=1.2Hz), 4.18(1H, m), 5.33-5.47(2H, m),

5.99(1H, d, J=8.4Hz), 6.66(1H, m), 6.99(1H, d, J=3.9Hz), 7.10(1H, d, J=3.3Hz),

7.26(1H, d, J=3.9Hz).

IR(CHCl₃): 3509, 3449, 2671, 1708, 1645, 1530, 1500, 1420 cm⁻¹.

[α]_D^{25.5}+43.5±0.8° (c=1.002, MeOH)

25 Elemental Analysis (C₂₆H₃₃NO₃S₃)

Calcd.(%): C, 61.99; H, 6.60; N, 2.78; S, 19.10

Found(%): C, 61.77; H, 6.68; N, 2.83; S, 18.91

Compound II-23

mp.118-120°C

300MHz ¹H-NMR(CDCl₃) δ: 0.94(1H, d, J=10.2Hz), 1.09 and 1.22(each 3H, each s), 1.51-2.42(14H, m), 2.53(3H, d, J=0.9Hz), 4.20(1H, m), 5.35-5.48(2H, m),

6.17(1H, d, J=8.7Hz), 6.77(1H, m), 7.34(1H, d, J=3.9Hz), 7.57(1H, d, J=3.6Hz),
7.60(1H, d, J=3.9Hz).

IR(Nujol): 3399, 3082, 1733, 1613, 1543, 1328, 1318, 1151 cm⁻¹.

[α]_D²⁵ +54.0±0.9° (c=1.012, MeOH)

Elemental Analysis (C₂₆H₃₂NO₆S₃)

10 Calcd.(%): C, 58.29; H, 6.21; N, 2.61; S, 17.95

Found(%): C, 58.08; H, 6.18; N, 2.73; S, 17.66

Compound II-24

mp.126-127°C

300MHz ¹H-NMR(CDCl₃) δ: 0.93(1H, d, J=10.2Hz), 1.08 and 1.20(each 3H, each
15 s), 1.50-2.46(14H, m), 4.17(1H, m), 5.33-5.51(2H, m), 6.04(1H, d, J=8.4Hz),
6.51(1H, dd, J=1.5 and 3.3Hz), 7.13(1H, dd, J=2.7 and 3.3Hz), 7.22(1H, dd,
J=7.8 and 9.0Hz), 7.73(1H, dd, J=1.5 and 2.1Hz), 7.91-7.96(2H, m).

IR(CHCl₃): 3513, 3449, 3144, 1733, 1709, 1651, 1592, 1507, 1496, 1385, 1181
cm⁻¹.

20 [α]_D²⁴ +36.2±0.8° (c=1.005, MeOH)

Elemental Analysis (C₂₇H₃₂FN₂O₅S)

Calcd.(%): C, 62.77; H, 6.44; N, 5.42; F, 3.68; S, 6.21

Found(%): C, 62.71; H, 6.49; N, 5.39; F, 3.69; S, 6.21

Compound II-25

25 mp.145-146°C

300MHz ¹H-NMR(CDCl₃) δ: 0.93(1H, d, J=10.2Hz), 1.08 and 1.20(each 3H, each
s), 1.50-2.45(14H, m), 3.86(3H, s), 4.17(1H, m), 5.33-5.51(2H, m), 6.04(1H, d,

$J=8.4\text{Hz}$), 6.48(1H, dd, $J=1.5$ and 3.3Hz), 6.98 and 7.85(each 2H, each d, each $J=9.0\text{Hz}$), 7.12(1H, dd, $J=2.7$ and 3.3Hz), 7.71(1H, dd, $J=1.8$ and 2.1Hz).
IR(CHCl_3): 3513, 3449, 3413, 3143, 1733, 1709, 1649, 1596, 1576, 1499, 1379, 1266, 1189, 1167 cm^{-1} .

5 $[\alpha]_{\text{D}^{24}+34.5\pm 0.7^\circ}$ ($c=1.005$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{36}\text{N}_2\text{O}_6\text{S}$)

Calcd.(%): C, 63.61; H, 6.86; N, 5.30; S, 6.07

Found(%): C, 63.54; H, 6.93; N, 5.18; S, 6.08

Compound II-26

10 300MHz ^1H -NMR(CDCl_3) δ : 0.97(1H, d, $J=10.5\text{Hz}$), 1.12 and 1.23(each 3H, each s), 1.50-2.50(14H, m), 4.23(1H, m), 5.39-5.51(2H, m), 6.09(1H, d, $J=9.6\text{Hz}$), 6.35(1H, dd, $J=2.4$ and 3.9Hz), 6.48(1H, dd, $J=2.4$ and 3.9Hz), 7.02(1H, dd, $J=3.6$ and 4.8Hz), 7.18(1H, dd, $J=0.6$ and 4.8Hz), 7.41(1H, dd, $J=0.6$ and 3.6Hz), 10.92(1H, brs).

15 IR(CHCl_3): 3506, 3447, 3220, 3164, 1704, 1617, 1537, 1508 cm^{-1} .

$[\alpha]_{\text{D}^{24}+50.7\pm 0.9^\circ}$ ($c=1.009$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{32}\text{N}_2\text{O}_8\text{S}\cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 67.59; H, 7.35; N, 6.31; S, 7.22

Found(%): C, 67.60; H, 7.23; N, 6.39; S, 7.34

20 Compound II-27

mp.138-139°C

300MHz ^1H -NMR(CDCl_3) δ : 0.97(1H, d, $J=10.2\text{Hz}$), 1.13 and 1.24(each 3H, each s), 1.50-2.47(14H, m), 4.24(1H, m), 5.36-5.52(2H, m), 6.06(1H, d, $J=8.4\text{Hz}$), 6.98(1H, d, $J=3.9\text{Hz}$), 6.99 and 7.05(each 1H, each d, each $J=16.2\text{Hz}$), 7.28-7.34(3H, m), 7.37(1H, d, $J=3.9\text{Hz}$).

IR(CHCl_3): 3518, 3449, 3431, 2665, 1708, 1642, 1538, 1519, 1500 cm^{-1} .

$[\alpha]_{\text{D}^{24}+49.1\pm 0.9^\circ}$ ($c=1.014$, MeOH)

Elemental Analysis ($C_{27}H_{33}NO_3S_2$)

Calcd.(%): C, 67.05; H, 6.88; N, 2.90; S, 13.26

Found(%): C, 67.94; H, 6.86; N, 2.99; S, 13.23

Compound II-28

5 300MHz 1H -NMR($CDCl_3$) δ : 0.94(1H, d, $J=9.9$ Hz), 1.07 and 1.22(each 3H, each s), 1.50-2.44(14H, m), 4.20(1H, m), 5.30-5.51(2H, m), 5.97(1H, d, $J=9.0$ Hz), 6.58(2H, s), 6.95(1H, d, $J=3.9$ Hz), 7.02(1H, dd, $J=1.5$ and 4.8Hz), 7.25-7.31(2H, m), 7.31(1H, d, $J=3.9$ Hz).

IR($CHCl_3$): 3517, 3449, 3430, 2664, 1708, 1642, 1536, 1519, 1501 cm^{-1} .

10 $[\alpha]_D^{24}+38.6\pm0.8^\circ$ ($c=1.006$, MeOH)

Elemental Analysis ($C_{27}H_{33}NO_3S_2 \cdot 0.2H_2O$)

Calcd.(%): C, 66.55; H, 6.91; N, 2.87; S, 13.16

Found(%): C, 66.52; H, 6.81; N, 3.11; S, 12.93

Compound II-29

15 300MHz 1H -NMR($CDCl_3$) δ : 0.94(1H, d, $J=10.2$ Hz), 1.09 and 1.22(each 3H, each s), 1.50-2.39(14H, m), 2.44(3H, d, $J=0.9$ Hz), 4.20(1H, m), 5.34-5.49(2H, m), 5.98(1H, d, $J=8.7$ Hz), 6.70(1H, m), 7.06(1H, d, $J=3.9$ Hz), 7.10(1H, d, $J=1.8$ Hz), 7.30(1H, d, $J=3.9$ Hz).

IR($CHCl_3$): 3518, 3450, 3430, 3110, 2669, 1740, 1708, 1645, 1530, 1499, 1420

20 cm^{-1} .

$[\alpha]_D^{24}+46.0\pm0.9^\circ$ ($c=0.968$, MeOH)

Elemental Analysis ($C_{26}H_{33}NO_3S_2$)

Calcd.(%): C, 61.99; H, 6.60; N, 2.78; S, 19.10

Found(%): C, 61.99; H, 6.61; N, 2.87; S, 19.18

25 Compound II-30

300MHz 1H -NMR($CDCl_3$) δ : 0.94(1H, d, $J=10.5$ Hz), 1.09 and 1.22(each 3H, each s), 1.51-2.42(14H, m), 2.47(3H, d, $J=0.9$ Hz), 4.21(1H, m), 5.35-5.49(2H, m),

6.18(1H, d, J=8.7Hz), 7.04(1H, m), 7.36 and 7.60(each 1H, each d, each J=3.9Hz), 7.91(1H, d, J=1.5Hz).

IR(CHCl₃): 3510, 3447, 3115, 2670, 1708, 1656, 1529, 1504, 1443, 1329, 1156, 1143 cm⁻¹.

5 $[\alpha]_D^{24} + 53.8 \pm 0.9^\circ$ (c=1.008, MeOH)

Elemental Analysis (C₂₆H₃₂NO₅S₃)

Calcd.(%): C, 58.29; H, 6.21; N, 2.61; S, 17.96

Found(%): C, 58.07; H, 6.05; N, 2.69; S, 17.94

Compound II-31

10 mp.98-100°C

300MHz ¹H-NMR(CDCl₃) δ: 0.94(1H, d, J=10.2Hz), 1.08 and 1.21(each 3H, each s), 1.50-2.43(14H, m), 4.13(2H, s), 4.20(1H, m), 5.33-5.49(2H, m), 5.97(1H, d, J=8.4Hz), 6.77(1H, m), 7.21-7.35(6H, m).

IR(KBr): 3407, 2674, 1703, 1630, 1511 cm⁻¹.

15 $[\alpha]_D^{24} + 46.8 \pm 0.9^\circ$ (c=1.006, MeOH)

Elemental Analysis (C₂₈H₃₅NO₅S)

Calcd.(%): C, 72.22; H, 7.58; N, 3.01; S, 6.89

Found(%): C, 72.04; H, 7.36; N, 3.27; S, 6.91

Compound II-32

20 300MHz ¹H-NMR(CDCl₃) δ: 0.94(1H, d, J=10.2Hz), 1.09 and 1.22(each 3H, each s), 1.50-2.45(14H, m), 4.22(1H, m), 5.35-5.49(2H, m), 6.04(1H, d, J=8.7Hz), 6.52 and 6.69(each 1H, each d, each J=12.0Hz), 6.99(1H, dd, J=3.6 and 5.1Hz), 7.07(1H, d, J=3.9Hz), 7.13(1H, d, J=3.9Hz), 7.27(1H, dd, J=0.9 and 5.1Hz), 7.36(1H, d, J=3.9Hz).

25 IR(CHCl₃): 3510, 3449, 3430, 2664, 1708, 1643, 1536, 1501 cm⁻¹.

$[\alpha]_D^{24} + 40.3 \pm 0.8^\circ$ (c=1.011, MeOH)

Elemental Analysis (C₂₇H₃₃NO₅S₂·0.3H₂O)

Calcd.(%): C, 66.31; H, 6.92; N, 2.86; S, 13.11

Found(%): C, 66.29; H, 6.81; N, 3.07; S, 13.13

Compound II-33

mp.117-118°C

300MHz ¹H-NMR(CDCl₃) δ: 0.97(1H, d, J=10.2Hz), 1.13 and 1.24(each 3H, each s), 1.50-2.47(14H, m), 4.24(1H, m), 5.36-5.52(2H, m), 6.06(1H, d, J=8.7Hz), 6.97 and 7.15(each 1H, each d, each J=15.9Hz), 6.98(1H, d, J=3.9Hz), 7.01(1H, dd, J=3.3 and 4.8Hz), 7.09(1H, d, J=3.3Hz), 7.23(1H, d, J=4.8Hz), 7.36(1H, d, J=3.9Hz).

IR(CHCl₃): 3517, 3450, 2670, 1738, 1708, 1641, 1537, 1518, 1500 cm⁻¹.

[α]_D²⁴+55.7±1.0° (c=1.001, MeOH)

Elemental Analysis (C₂₇H₃₃NO₃S₂)

Calcd.(%): C, 67.05; H, 6.88; N, 2.90; S, 13.26

Found(%): C, 66.91; H, 6.83; N, 2.97; S, 13.13

Compound II-34

300MHz ¹H-NMR(CDCl₃) δ: 0.93(1H, d, J=10.5Hz), 1.08 and 1.22(each 3H, each s), 1.50-2.41(14H, m), 2.39(3H, d, J=0.6Hz), 4.21(1H, m), 5.35-5.48(2H, m), 5.99(1H, m), 6.15(1H, d, J=8.7Hz), 6.20(1H, t, J=3.3Hz), 7.18(1H, dd, J=1.8 and 3.3Hz), 7.31 and 7.54(each 1H, each d, each J=3.9Hz).

IR(CHCl₃): 3511, 3446, 3150, 3101, 1708, 1658, 1529, 1504, 1375, 1183, 1160 cm⁻¹.

[α]_D²³+50.3±0.9° (c=1.007, MeOH)

Elemental Analysis (C₂₆H₃₄N₂O₆S₂·0.2H₂O)

Calcd.(%): C, 59.79; H, 6.64; N, 5.36; S, 12.28

Found(%): C, 59.72; H, 6.61; N, 5.51; S, 12.37

Compound II-35

300MHz ¹H-NMR(CDCl₃) δ: 0.93(1H, d, J=10.2Hz), 1.09 and 1.22(each 3H, each

s), 1.51-2.44(14H, m), 4.20(1H, m), 5.34-5.50(2H, m), 6.22 and 6.23(total 1H, each d, J=8.1 and 8.7Hz), 7.12(1H, dd, J=3.9 and 5.1Hz), 7.44(2H, m), 7.60(1H, m), 7.69(1H, m).

IR(CHCl₃): 3509, 3447, 3092, 1708, 1653, 1530, 1503 cm⁻¹.

5 [α]_D²³+49.3±0.9° (c=1.002, MeOH)

Elemental Analysis (C₂₅H₃₁NO₄S₃·0.4H₂O)

Calcd.(%): C, 58.54; H, 6.25; N, 2.73; S, 18.75

Found(%): C, 58.62; H, 6.16; N, 2.88; S, 18.72

Compound II-36

10 300MHz ¹H-NMR(CDCl₃) δ: 0.94(1H, d, J=10.2Hz), 1.09 and 1.10(total 3H, each s), 1.22 and 1.23(total 3H, each s), 1.51-2.44(14H, m), 2.52 and 2.53(total 3H, each d, J=0.6Hz), 4.20(1H, m), 5.35-5.50(2H, m), 6.23 and 6.24(total 1H, each d, J=8.7 and 8.4Hz), 6.77(1H, m), 7.39-7.46(3H, m).

IR(CHCl₃): 3510, 3447, 3429, 3093, 2665, 1708, 1652, 1530, 1502, 1437 cm⁻¹.

15 [α]_D²³+47.4±0.9° (c=1.008, MeOH)

Elemental Analysis (C₂₆H₃₃NO₄S₃·0.3H₂O)

Calcd.(%): C, 59.47; H, 6.45; N, 2.67; S, 18.32

Found(%): C, 59.59; H, 6.16; N, 2.76; S, 18.11

Compound II-37

20 300MHz ¹H-NMR(CDCl₃) δ: 0.93(1H, d, J=10.5Hz), 1.08 and 1.21(each 3H, each s), 1.50-2.42(14H, m), 3.84(3H, s), 4.12(2H, s), 4.19(1H, m), 5.33-5.48(2H, m), 5.98(1H, d, J=9.0Hz), 6.77(1H, dt, J=0.9 and 3.9Hz), 6.88(1H, d, J=8.1Hz), 9.90(1H, m), 7.15(1H, m), 7.23(1H, m), 7.28(1H, d, J=3.9Hz).

IR(CHCl₃): 3509, 3450, 3431, 2664, 1739, 1708, 1639, 1544, 1506, 1464 cm⁻¹.

25 [α]_D²⁴+40.4±0.8° (c=1.003, MeOH)

Elemental Analysis (C₂₅H₃₇NO₄S·0.1H₂O)

Calcd.(%): C, 70.02; H, 7.53; N, 2.81; S, 6.45

Found(%): C, 69.92; H, 7.53; N, 2.96; S, 6.46

Compound II-38

300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J=10.2\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.50-2.47(14H, m), 4.13(2H, s), 4.20(1H, m), 5.33-5.50(2H, m), 6.01(1H, d, $J=9.0\text{Hz}$), 6.80(1H, m), 6.82(1H, m), 6.86(1H, m), 7.12(1H, m), 7.15(1H, m), 7.31(1H, d, $J=3.9\text{Hz}$).

IR(CHCl_3): 3597, 3510, 3448, 3427, 3190, 1709, 1633, 1545, 1508, 1456 cm^{-1} .

$[\alpha]_{\text{D}}^{24} +41.8^\circ \pm 0.8^\circ$ ($c=1.004$, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{36}\text{NO}_4\text{S} \cdot 0.3\text{H}_2\text{O}$)

Calcd.(%): C, 69.11; H, 7.37; N, 2.88; S, 6.59

Found(%): C, 68.94; H, 7.42; N, 2.96; S, 6.73

Compound II-39

300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J=10.2\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.50-2.44(14H, m), 2.27(3H, s), 4.05(2H, s), 4.20(1H, m), 5.33-5.49(2H, m), 6.01(1H, d, $J=8.7\text{Hz}$), 6.71(1H, d, $J=3.9\text{Hz}$), 7.09(1H, dd, $J=1.2$ and 7.8Hz), 7.17-7.32(3H, m), 7.28(1H, d, $J=3.9\text{Hz}$).

IR(CHCl_3): 3516, 3450, 3431, 2669, 1747, 1709, 1641, 1543, 1506, 1456, 1369 cm^{-1} .

$[\alpha]_{\text{D}}^{24} +40.2^\circ \pm 0.8^\circ$ ($c=1.006$, MeOH)

Elemental Analysis ($\text{C}_{30}\text{H}_{37}\text{NO}_5\text{S} \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 68.34; H, 7.15; N, 2.66; S, 6.08

Found(%): C, 68.33; H, 6.94; N, 2.83; S, 6.31

Compound II-40

300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J=10.5\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.50-2.41(14H, m), 4.20(1H, m), 5.39-5.47(2H, m), 6.19(1H, d, $J=8.4\text{Hz}$), 7.35(1H, d, $J=3.9\text{Hz}$), 7.51-7.64(4H, m), 7.98(2H, m).

IR(CHCl_3): 3516, 3446, 2667, 1709, 1657, 1529, 1504, 1327, 1157 cm^{-1} .

$[\alpha]_{\text{D}}^{20} + 55.6^{\circ} \pm 1.0^{\circ}$ ($c=1.004$, MeOH)

Elemental Analysis ($\text{C}_{27}\text{H}_{33}\text{NO}_5\text{S} \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 62.45; H, 6.48; N, 2.70; S, 12.35

Found(%): C, 62.46; H, 6.40; N, 2.75; S, 12.19

5 Compound II-41

300MHz ^1H -NMR(CDCl_3) δ : 0.95(1H, d, $J=10.5\text{Hz}$), 1.09 and 1.22(each 3H, each s), 1.50-2.44(14H, m), 2.31(3H, s), 4.22(1H, m), 5.35-5.49(2H, m), 6.01(1H, d, $J=8.7\text{Hz}$), 7.03-7.21(4H, m), 7.38(1H, d, $J=3.9\text{Hz}$).

IR(CHCl_3): 3516, 3448, 3429, 1739, 1709, 1647, 1529, 1500, 1473, 1421 cm^{-1} .

10 $[\alpha]_{\text{D}}^{20} + 46.2^{\circ} \pm 1.0^{\circ}$ ($c=1.003$, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{35}\text{NO}_5\text{S}_2 \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 67.08; H, 7.12; N, 2.79; S, 12.79

Found(%): C, 67.12; H, 7.04; N, 2.94; S, 12.88

Compound II-42

15 mp.111.2-115°C

300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J=10.2\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.50-2.39(14H, m), 2.42(3H, s), 4.20(1H, m), 5.34-5.47(2H, m), 6.17(1H, d, $J=8.7\text{Hz}$), 7.34(1H, d, $J=3.9\text{Hz}$), 7.41(2H, m), 7.59(1H, d, $J=3.9\text{Hz}$), 7.78(2H, m).

20 IR(CHCl_3): 3516, 3446, 1739, 1707, 1655, 1529, 1504, 1331, 1151 cm^{-1} .

$[\alpha]_{\text{D}}^{20} + 53.0^{\circ} \pm 0.9^{\circ}$ ($c=1.002$, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{35}\text{NO}_5\text{S}_2 \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 63.06; H, 6.69; N, 2.63; S, 12.02

Found(%): C, 63.07; H, 6.62; N, 2.73; S, 12.04

25 Compound II-43

300MHz ^1H -NMR(CDCl_3) δ : 0.95(1H, d, $J=10.2\text{Hz}$), 1.09 and 1.22(each 3H, each s), 1.50-2.44(14H, m), 3.77(3H, s), 4.22(1H, m), 5.35-5.49(2H, m), 6.04(1H, d,

J=8.7Hz), 6.74-6.89(3H, m), 7.17-7.23(2H, m), 7.40(1H, d, J=3.9Hz).

IR(CHCl₃): 3514, 3448, 3431, 1739, 1707, 1649, 1529, 1500, 1477 cm⁻¹.

[α]_D²⁰+45.8°±0.9° (c=1.011, MeOH)

Elemental Analysis (C₂₅H₃₅NO₄S₂·0.3H₂O)

5 Calcd.(%): C, 64.78; H, 6.91; N, 2.70; S, 12.35

Found(%): C, 64.62; H, 6.83; N, 2.85; S, 12.65

Compound II-44

300MHz ¹H-NMR(CDCl₃) δ : 0.93(1H, d, J=10.5Hz), 1.08 and 1.21(each 3H, each s), 1.50-2.41(14H, m), 3.86(3H, s), 4.20(1H, m), 5.34-5.47(2H, m), 6.17(1H, d,

10 J=8.7Hz), 7.12(1H, m), 7.35(1H, d, J=3.9Hz), 7.40-7.48(2H, m), 7.56(1H, m), 7.60(1H, d, J=3.9Hz).

IR(CHCl₃): 3514, 3446, 2667, 1707, 1657, 1599, 1529, 1504, 1481, 1329, 1252, 1151 cm⁻¹.

[α]_D²⁰+52.6°±0.9° (c=1.011, MeOH)

15 Elemental Analysis (C₂₈H₃₆NO₆S₂·0.2H₂O)

Calcd.(%): C, 61.22; H, 6.50; N, 2.55; S, 11.67

Found(%): C, 61.10; H, 6.36; N, 2.65; S, 11.73

Compound II-45

300MHz ¹H-NMR(CDCl₃) δ : 0.92(1H, d, J=10.5Hz), 1.07 and 1.20(each 3H, each s), 1.52-2.43(14H, m), 4.18(1H, m), 5.33-5.50(2H, m), 6.42(1H, d, J=8.4Hz),

20 7.07(1H, m), 7.33-7.39(2H, m), 7.46-7.51(2H, m), 7.56(1H, d, J=3.9Hz).

IR(CHCl₃): 3587, 3442, 3280, 1707, 1643, 1531, 1329, 1308, 1149 cm⁻¹.

[α]_D²⁰+53.2°±0.9° (c=1.010, MeOH)

Elemental Analysis (C₂₇H₃₃NO₆S₂·0.4H₂O)

25 Calcd.(%): C, 60.18; H, 6.32; N, 2.60; S, 11.90

Found(%): C, 60.19; H, 6.06; N, 2.63; S, 11.99

Compound II-46

300MHz ^1H -NMR(CDCl_3) δ : 0.91(1H, d, $J=10.2\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.50-2.45(14H, m), 4.20(1H, m), 5.33-5.50(2H, m), 6.17(1H, d, $J=8.7\text{Hz}$), 6.72(2H, m), 6.79(1H, m), 7.11(2H, m), 7.38(1H, d, $J=3.9\text{Hz}$).

IR(CHCl_3): 3342, 2669, 1707, 1622, 1583, 1535 cm^{-1} .

5 $[\alpha]_{\text{D}^{23}+45.6^\circ\pm 0.9^\circ}$ ($c=1.007$, MeOH)

Elemental Analysis ($\text{C}_{27}\text{H}_{33}\text{NO}_4\text{S}_2\cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 64.44; H, 6.69; N, 2.78; S, 12.74

Found(%): C, 64.33; H, 6.59; N, 2.83; S, 13.07

Compound II-47

10 300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=10.5\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.50-2.43(14H, m), 3.79(3H, s), 4.10(2H, s), 4.20(1H, m), 5.33-5.49(2H, m), 5.98(1H, d, $J=8.7\text{Hz}$), 6.76-6.85(4H, m), 7.24(1H, m), 7.32(1H, d, $J=3.9\text{Hz}$).

IR(CHCl_3): 3516, 3450, 3431, 2669, 1738, 1709, 1641, 1600, 1437, 1261 cm^{-1} .

$[\alpha]_{\text{D}^{23.5}+42.8^\circ\pm 0.8^\circ}$ ($c=1.005$, MeOH)

15 Elemental Analysis ($\text{C}_{25}\text{H}_{37}\text{NO}_4\text{S}$)

Calcd.(%): C, 70.27; H, 7.52; N, 2.83; S, 6.47

Found(%): C, 70.05; H, 7.55; N, 2.84; S, 6.45

Compound II-48

20 300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=10.2\text{Hz}$), 1.09 and 1.21(each 3H, each s), 1.51-2.43(14H, m), 3.38(3H, s), 4.18(1H, m), 5.33-5.50(2H, m), 5.83(1H, d, $J=8.7\text{Hz}$), 6.16(1H, d, $J=3.9\text{Hz}$), 7.14(1H, m), 7.21-7.27(4H, m), 7.33-7.39(2H, m).

IR(CHCl_3): 3514, 3450, 2661, 1739, 1709, 1628, 1597, 1495, 1479, 1415, 1132 cm^{-1} .

25 $[\alpha]_{\text{D}^{23}+50.8^\circ\pm 0.9^\circ}$ ($c=1.005$, MeOH)

Elemental Analysis ($\text{C}_{25}\text{H}_{36}\text{N}_2\text{O}_5\text{S}\cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 69.45; H, 7.58; N, 5.78; S, 6.62

Found(%): C, 69.45; H, 7.39; N, 5.99; S, 6.65

Compound II-49

300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J=9.9\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.50-2.42(14H, m), 2.28(3H, s), 4.12(2H, s), 4.20(1H, m), 5.33-5.48(2H, m),

5 5.98(1H, d, $J=9.0\text{Hz}$), 6.71(1H, d, $J=3.6\text{Hz}$), 7.17(4H, s), 7.30(1H, d, $J=3.6\text{Hz}$).

IR(CHCl_3): 3518, 3450, 3430, 1739, 1709, 1641, 1543, 1506, 1471, 1458 cm^{-1} .

$[\alpha]_{\text{D}}^{22.5} + 42.9^\circ \pm 0.8^\circ$ ($c=1.000$, MeOH)

Elemental Analysis ($\text{C}_{25}\text{H}_{37}\text{NO}_3\text{S}$)

Calcd.(%): C, 72.61; H, 7.77; N, 2.92; S, 6.68

10 Found(%): C, 72.43; H, 7.78; N, 3.09; S, 6.62

Compound II-50

300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J=10.2\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.50-2.46(14H, m), 4.19(1H, m), 5.33-5.50(2H, m), 6.03(1H, d, $J=8.7\text{Hz}$),

6.52(1H, dd, $J=1.5$ and 3.3Hz), 7.11(1H, dd, $J=3.9$ and 4.8Hz), 7.17(1H, dd,

15 $J=2.1$ and 3.3Hz), 7.70-7.72(2H, m), 7.74(1H, dd, $J=1.2$ and 3.9Hz).

IR(CHCl_3): 3510, 3448, 3143, 2666, 1733, 1708, 1650, 1572, 1507, 1387, 1179 cm^{-1} .

$[\alpha]_{\text{D}}^{24} + 39.1^\circ \pm 0.8^\circ$ ($c=1.003$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{32}\text{N}_2\text{O}_5\text{S}_2$)

20 Calcd.(%): C, 59.50; H, 6.39; N, 5.55; S, 12.71

Found(%): C, 59.49; H, 6.46; N, 5.47; S, 12.70

Compound II-51

300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=9.9\text{Hz}$), 1.09 and 1.22(each 3H, each s), 1.50-2.42(14H, m), 2.43(3H, s), 4.20(1H, m), 4.24(2H, s), 5.34-5.49(2H, m),

25 5.99(1H, d, $J=8.7\text{Hz}$), 6.58(1H, m), 6.67(1H, d, $J=3.3\text{Hz}$), 6.83(1H, d, $J=3.9\text{Hz}$),

7.32(1H, d, $J=3.9\text{Hz}$).

IR(CHCl_3): 3516, 3450, 3431, 2667, 1709, 1643, 1545, 1508, 1471, 1458 cm^{-1} .

$[\alpha]_{\text{D}}^{22} + 42.8 \pm 0.8^\circ$ ($c = 1.006$, MeOH)

Elemental Analysis ($\text{C}_{27}\text{H}_{35}\text{NO}_3\text{S}_2$)

Calcd.(%): C, 66.77; H, 7.26; N, 2.88; S, 13.20

Found(%): C, 66.60; H, 7.23; N, 2.93; S, 13.19

5 Compound II-52

300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J = 10.5\text{Hz}$), 1.09 and 1.22(each 3H, each s), 1.50-2.44(14H, m), 2.31(3H, s), 4.21(1H, m), 4.25(2H, s), 5.34-5.49(2H, m), 6.01(1H, d, $J = 8.7\text{Hz}$), 6.83(1H, d, $J = 3.9\text{Hz}$), 7.03(1H, m), 7.11-7.20(3H, m), 7.27(1H, d, $J = 3.9\text{Hz}$).

10 IR(CHCl_3): 3516, 3450, 3431, 2665, 1739, 1709, 1643, 1543, 1508, 1473 cm^{-1} .

$[\alpha]_{\text{D}}^{22} + 42.6 \pm 1.0^\circ$ ($c = 0.861$, MeOH)

Elemental Analysis ($\text{C}_{29}\text{H}_{37}\text{NO}_3\text{S}_2\text{H}_2\text{O}$)

Calcd.(%): C, 67.59; H, 7.31; N, 2.72; S, 12.44

Found(%): C, 67.49; H, 7.27; N, 2.82; S, 12.35

15 Compound II-53

300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J = 9.9\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.50-2.41(14H, m), 2.60(3H, s), 4.20(1H, m), 5.34-5.48(2H, m), 6.18(1H, d, $J = 8.7\text{Hz}$), 7.28(1H, d-like), 7.36(1H, d, $J = 3.9\text{Hz}$), 7.40(1H, t-like), 7.51(1H, dt, $J = 1.2$ and 7.2Hz), 7.61(1H, d, $J = 3.9\text{Hz}$), 8.15(1H, dd, $J = 1.2$ and 8.1Hz).

20 IR(CHCl_3): 3512, 3446, 1739, 1709, 1655, 1529, 1504, 1325, 1157 cm^{-1} .

$[\alpha]_{\text{D}}^{24} + 51.1 \pm 0.9^\circ$ ($c = 1.010$, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{35}\text{NO}_3\text{S}_2$)

Calcd.(%): C, 63.49; H, 6.66; N, 2.64; S, 12.11

Found(%): C, 63.23; H, 6.53; N, 2.70; S, 12.17

25 Compound II-54

300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J = 10.2\text{Hz}$), 1.07 and 1.21(each 3H, each s), 1.50-2.40(14H, m), 2.42(3H, s), 4.20(1H, m), 5.34-5.47(2H, m), 6.17(1H, d,

$J=8.7\text{Hz}$), 7.32(1H, d-like), 7.34 and 7.57(each 1H, each d, each $J=4.2\text{Hz}$), 7.86(2H, d-like).

IR(CHCl_3): 3512, 3446, 1741, 1707, 1655, 1529, 1504, 1331, 1153 cm^{-1} .

$[\alpha]_{\text{D}}^{24}+54.9\pm0.9^\circ$ ($c=1.008$, MeOH)

5 Elemental Analysis ($\text{C}_{28}\text{H}_{36}\text{NO}_5\text{S}_2$)

Calcd.(%): C, 63.49; H, 6.66; N, 2.64; S, 12.11

Found(%): C, 63.16; H, 6.54; N, 2.70; S, 12.16

Compound II-55

300MHz ^1H -NMR(CDCl_3) δ : 0.95(1H, d, $J=10.5\text{Hz}$), 1.09 and 1.21(each 3H, each s), 1.50-2.44(14H, m), 4.15(2H, s), 4.20(1H, m), 5.33-5.49(2H, m), 6.01(1H, d, $J=9.3\text{Hz}$), 6.13(1H, dd, $J=0.6$ and 3.0Hz), 6.32(1H, dd, $J=1.8$ and 3.0Hz), 6.84 and 7.22(each 1H, each d, each $J=3.6\text{Hz}$), 7.47(1H, dd, $J=0.6$ and 1.8Hz).

IR(CHCl_3): 3518, 3450, 3431, 2669, 1739, 1709, 1643, 1545, 1506 cm^{-1} .

$[\alpha]_{\text{D}}^{23}+45.8\pm0.9^\circ$ ($c=1.003$, MeOH)

15 Elemental Analysis ($\text{C}_{28}\text{H}_{38}\text{NO}_4\text{S}\cdot0.6\text{H}_2\text{O}$)

Calcd.(%): C, 66.95; H, 7.39; N, 3.00; S, 6.87

Found(%): C, 67.04; H, 7.17; N, 3.11; S, 7.03

Compound II-56

300MHz ^1H -NMR(CDCl_3) δ : 0.95(1H, d, $J=10.5\text{Hz}$), 1.10 and 1.22(each 3H, each s), 1.52-2.45(14H, m), 3.96(2H, s), 4.20(1H, m), 5.33-5.49(2H, m), 6.00(1H, d, $J=8.7\text{Hz}$), 6.30(1H, dd, $J=0.9$ and 1.8Hz), 6.81(1H, d, $J=3.6\text{Hz}$), 7.31-7.33(2H, m), 7.38(1H, t, $J=1.8\text{Hz}$).

IR(CHCl_3): 3516, 3450, 3431, 2663, 1739, 1709, 1643, 1545, 1506 cm^{-1} .

$[\alpha]_{\text{D}}^{21}+46.5\pm0.9^\circ$ ($c=1.002$, MeOH)

25 Elemental Analysis ($\text{C}_{28}\text{H}_{38}\text{NO}_4\text{S}\cdot0.1\text{H}_2\text{O}$)

Calcd.(%): C, 68.27; H, 7.32; N, 3.06; S, 7.01

Found(%): C, 68.08; H, 7.14; N, 3.21; S, 7.19

Compound II-57

300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=10.2\text{Hz}$), 1.09 and 1.21(each 3H, each s), 1.50-2.42(14H, m), 4.20(1H, m), 4.41(2H, s), 5.33-5.49(2H, m), 6.01(1H, d, $J=8.7\text{Hz}$), 6.91(1H, d, $J=3.6\text{Hz}$), 7.11(1H, s), 7.27-7.35(3H, m), 7.68-7.77(2H, m).

IR(CHCl_3): 3512, 3446, 3431, 1709, 1645, 1543, 1508 cm^{-1} .

$[\alpha]_{\text{D}}^{24}+44.9\pm0.9^\circ$ ($c=1.002$, MeOH)

Elemental Analysis ($\text{C}_{30}\text{H}_{35}\text{NO}_3\text{S}_2\cdot0.3\text{H}_2\text{O}$)

Calcd.(%): C, 68.35; H, 6.81; N, 2.66; S, 12.17

10 Found(%): C, 68.17; H, 6.52; N, 2.68; S, 12.04

Compound II-58

300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=10.5\text{Hz}$), 1.09 and 1.21(each 3H, each s), 1.50-2.41(14H, m), 4.19(1H, m), 4.29(2H, s), 5.33-5.48(2H, m), 6.02(1H, d, $J=8.4\text{Hz}$), 6.51(1H, s), 6.91(1H, d, $J=3.6\text{Hz}$), 7.16-7.25(2H, m), 7.34(1H, d, $J=3.6\text{Hz}$), 7.42(1H, d, $J=8.4\text{Hz}$), 7.50(1H, m).

IR(CHCl_3): 3516, 3450, 3431, 1739, 1709, 1643, 1545, 1508, 1454 cm^{-1} .

$[\alpha]_{\text{D}}^{23}+42.3\pm0.8^\circ$ ($c=1.001$, MeOH)

Elemental Analysis ($\text{C}_{30}\text{H}_{35}\text{NO}_4\text{S}\cdot0.3\text{H}_2\text{O}$)

Calcd.(%): C, 70.50; H, 7.02; N, 2.74; S, 6.27

20 Found(%): C, 70.36; H, 6.94; N, 2.70; S, 6.17

Compound II-59

300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=10.2\text{Hz}$), 1.08 and 1.20(each 3H, each s), 1.49-2.42(14H, m), 4.20(1H, m), 4.19(2H, s), 5.33-5.48(2H, m), 5.99(1H, d, $J=9.0\text{Hz}$), 6.80(1H, d, $J=3.6\text{Hz}$), 7.22(1H, d, $J=7.5\text{Hz}$), 7.31-7.50(7H, m), 7.57(2H, m).

IR(CHCl_3): 3518, 3450, 3431, 2671, 1739, 1709, 1643, 1543, 1506, 1471, 1456 cm^{-1} .

$[\alpha]_{\text{D}}^{24} + 38.7 \pm 0.8^\circ$ ($c = 1.014$, MeOH)

Elemental Analysis ($\text{C}_{34}\text{H}_{39}\text{NO}_3\text{S} \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 74.88; H, 7.28; N, 2.57; S, 5.88

Found(%): C, 74.92; H, 7.30; N, 2.75; S, 5.99

5 Compound II-60

300MHz ^1H -NMR(CDCl_3) δ : 0.97(1H, d, $J = 10.2\text{Hz}$), 1.06 and 1.22(each 3H, each s), 1.52-2.48(14H, m), 4.11(2H, s), 4.31(1H, m), 5.34-5.51(2H, m), 6.15(1H, d, $J = 9.0\text{Hz}$), 7.19-7.30(6H, m), 7.76(1H, d, $J = 8.1\text{Hz}$), 7.83(1H, s), 8.15(1H, s)
IR(CHCl_3): 3516, 3442, 2667, 1739, 1709, 1651, 1514, 1495, 1471, 1454, 1435

10 cm^{-1} .

$[\alpha]_{\text{D}}^{24} + 42.8 \pm 0.8^\circ$ ($c = 1.011$, MeOH)

Elemental Analysis ($\text{C}_{32}\text{H}_{37}\text{NO}_3\text{S}$)

Calcd.(%): C, 74.53; H, 7.23; N, 2.72; S, 6.22

Found(%): C, 74.25; H, 7.20; N, 2.97; S, 6.05

15 Compound II-61

300MHz ^1H -NMR(CDCl_3) δ : 0.98(1H, d, $J = 10.2\text{Hz}$), 1.10 and 1.23(each 3H, each s), 1.52-2.49(14H, m), 4.10(2H, s), 4.32(1H, m), 5.35-5.53(2H, m), 6.17(1H, d, $J = 8.7\text{Hz}$), 7.19-7.32(6H, m), 7.64(1H, d, $J = 0.9\text{Hz}$), 7.76(1H, s), 8.21(1H, d, $J = 8.4\text{Hz}$).

20 IR(CHCl_3): 3518, 3442, 2671, 1739, 1707, 1651, 1514, 1493, 1469, 1454, 1404 cm^{-1} .

$[\alpha]_{\text{D}}^{24} + 47.1 \pm 0.9^\circ$ ($c = 1.001$, MeOH)

Elemental Analysis ($\text{C}_{32}\text{H}_{37}\text{NO}_3\text{S} \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 74.01; H, 7.26; N, 2.70; S, 6.17

25 Found(%): C, 73.89; H, 7.44; N, 2.93; S, 6.04

Compound II-62

mp.134-135°C

300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J=10.5\text{Hz}$), 0.98 and 1.15(each 3H, each s), 1.48-2.43(14H, m), 4.20(1H, m), 4.40 and 4.54(each 1H, each d, $J=16.5\text{Hz}$), 5.33-5.50(2H, m), 6.04(1H, d, $J=8.4\text{Hz}$), 6.99-7.30(6H, m), 7.55(1H, s), 7.73(1H, d, $J=8.4\text{Hz}$).

5 IR(CHCl_3): 3518, 3437, 2669, 1741, 1709, 1653, 1510, 1471, 1454 cm^{-1} .

$[\alpha]_{\text{D}^{25}}+54.2\pm 0.9^\circ$ ($c=1.003$, MeOH)

Elemental Analysis ($\text{C}_{32}\text{H}_{37}\text{NO}_3\text{S}\cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 74.27; H, 7.25; N, 2.71; S, 6.20

Found(%): C, 74.11; H, 7.16; N, 3.15; S, 6.25

10 Compound II-63

300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=10.5\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.49-2.43(14H, m), 3.94(2H, s), 4.22(1H, m), 5.33-5.49(2H, m), 6.03(1H, d, $J=8.7\text{Hz}$), 7.04(1H, s), 7.17-7.33(6H, m).

IR(CHCl_3): 3516, 3448, 3433, 2669, 1739, 1709, 1645, 1549, 1508, 1471, 1454

15 cm^{-1} .

$[\alpha]_{\text{D}^{25}}+40.5\pm 0.8^\circ$ ($c=1.003$, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{35}\text{NO}_3\text{S}\cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 71.95; H, 7.59; N, 3.00; S, 6.86

Found(%): C, 71.82; H, 7.49; N, 3.37; S, 6.83

20 Compound II-64

300MHz ^1H -NMR(CDCl_3) δ : 0.98(1H, d, $J=10.5\text{Hz}$), 1.10 and 1.23(each 3H, each s), 1.53-2.50(14H, m), 4.24(2H, s), 4.33(1H, m), 5.35-5.54(2H, m), 6.18(1H, d, $J=8.4\text{Hz}$), 7.19-7.30(6H, m), 7.42(1H, t, $J=7.8\text{Hz}$), 7.78(1H, s), 8.18(1H, d, $J=7.8\text{Hz}$).

25 IR(CHCl_3): 3514, 3442, 2671, 1709, 1651, 1516, 1495, 1471, 1454, cm^{-1} .

$[\alpha]_{\text{D}^{25}}+53.6\pm 0.9^\circ$ ($c=1.003$, MeOH),

Elemental Analysis ($\text{C}_{32}\text{H}_{37}\text{NO}_3\text{S}\cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 74.27; H, 7.25; N, 2.71; S, 6.20

Found(%): C, 74.18; H, 7.24; N, 2.90; S, 6.14

Compound II-65

mp.117-118°C

- 5 300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=9.9\text{Hz}$), 1.09 and 1.21(each 3H, each s), 1.55-2.42(14H, m), 3.87(3H, s), 4.06(2H, s), 4.18(1H, m), 5.35-5.49(2H, m), 5.56(1H, brs), 5.89(1H, d, $J=8.7\text{Hz}$), 6.72-6.77(3H, m), 6.87(1H, d, $J=8.1\text{Hz}$), 7.31(1H, d, $J=3.6\text{Hz}$).

IR(Nujol): 3373, 3184, 2667, 1705, 1622, 1599, 1547, 1520, 1286 cm^{-1} .

- 10 $[\alpha]_{\text{D}}^{23}+42.0\pm 0.8^\circ$ ($c=1.008$, MeOH)

Elemental Analysis ($\text{C}_{29}\text{H}_{37}\text{NO}_5\text{S}$)

Calcd.(%): C, 68.07; H, 7.29; N, 2.74; S, 6.27

Found(%): C, 67.84; H, 7.43; N, 2.71; S, 6.18

Compound II-66

- 15 300MHz ^1H -NMR(CDCl_3) δ : 0.95(1H, d, $J=9.9\text{Hz}$), 1.10 and 1.23(each 3H, each s), 1.53-2.45(14H, m), 3.87(3H, s), 2.96-3.01(2H, m), 3.10-3.16(2H, m), 4.22(1H, m), 5.34-5.50(2H, m), 6.01(1H, d, $J=8.4\text{Hz}$), 6.71(1H, d, $J=3.9\text{Hz}$), 7.16-7.32(6H, m).

IR(CHCl_3): 3518, 3450, 3431, 2671, 1739, 1709, 1641, 1545, 1508 cm^{-1} .

- 20 $[\alpha]_{\text{D}}^{22}+44.3\pm 0.8^\circ$ ($c=1.006$, MeOH)

Elemental Analysis ($\text{C}_{29}\text{H}_{37}\text{NO}_5\text{S}\cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 72.34; H, 7.79; N, 2.91; S, 6.66

Found(%): C, 72.24; H, 7.68; N, 3.11; S, 6.73

Compound II-67

- 25 300MHz ^1H -NMR(CDCl_3) δ : 0.95(1H, d, $J=10.2\text{Hz}$), 1.10 and 1.23(each 3H, each s), 1.52-2.45(14H, m), 2.43(3H, d, $J=0.9\text{Hz}$), 3.07-3.18(4H, m), 4.21(1H, m), 5.35-5.50(2H, m), 6.02(1H, d, $J=8.4\text{Hz}$), 6.53-6.57(2H, m), 6.76 and 7.30(each

1H, each d, each J=3.9Hz).

IR(CHCl₃): 3516, 3450, 3431, 2667, 1709, 1641, 1543, 1508 cm⁻¹.

[α]_D²²+43.1±0.8° (c=1.005, MeOH)

Elemental Analysis (C₂₈H₃₇NO₃S₂·0.3H₂O)

5 Calcd.(%): C, 66.58; H, 7.50; N, 2.77; S, 12.70

Found(%): C, 66.47; H, 7.46; N, 2.99; S, 12.62

Compound II-68

300MHz ¹H-NMR(CDCl₃) δ : 0.95(1H, d, J=10.2Hz), 1.10 and 1.23(each 3H, each s), 1.52-2.45(14H, m), 3.19(4H, s), 4.21(1H, m), 5.34-5.50(2H, m), 6.01(1H, d,

10 J=8.4Hz), 6.75(1H, d, J=3.9Hz), 6.79(1H, m), 6.91(1H, dd, J=3.6 and 5.1Hz), 7.13(1H, dd, J=0.9 and 5.1Hz), 7.29(1H, d, J=3.9Hz).

IR(CHCl₃): 3514, 3450, 3433, 2667, n 1739, 1709, 1641, 1545, 1508 cm⁻¹.

[α]_D²⁴+33.5±0.8° (c=1.009, MeOH)

Elemental Analysis (C₂₇H₃₅NO₃S₂)

15 Calcd.(%): C, 66.77; H, 7.26; N, 2.88; S, 13.20

Found(%): C, 66.48; H, 7.31; N, 2.97; S, 13.22

Compound II-69

300MHz ¹H-NMR(CDCl₃) δ : 0.97(1H, d, J=9.9Hz), 1.12 and 1.23(each 3H, each s), 1.53-2.47(14H, m), 3.00-3.06(2H, m), 3.12-3.17(2H, m), 4.27(1H, m), 5.34-

20 5.51(2H, m), 6.24(1H, d, J=9.0Hz), 6.75(1H, m), 6.90(1H, dd, J=3.6 and 5.4Hz), 7.12(1H, dd, J=1.2 and 5.4Hz), 7.25 and 7.64(each 2H, each d-like).

IR(CHCl₃): 3516, 3452, 2665, 1738, 1709, 1649, 1523, 1495 cm⁻¹.

[α]_D²⁴+54.5±0.9° (c=1.016, MeOH)

Elemental Analysis (C₂₉H₃₇NO₃S)

25 Calcd.(%): C, 72.61; H, 7.77; N, 2.92; S, 6.68

Found(%): C, 72.51; H, 7.69; N, 2.98; S, 6.62

Compound II-70

300MHz ¹H-NMR(CDCl₃) δ: 0.95(1H, d, J=10.2Hz), 1.10 and 1.23(each 3H, each s), 1.51-2.45(14H, m), 2.92-2.97(2H, m), 3.08-3.13(2H, m), 4.22(1H, m), 5.34-5.50(2H, m), 6.00(1H, d, J=8.7Hz), 6.69(1H, d, J=3.6Hz), 6.92-7.00(2H, m), 7.09-7.15(2H, m), 7.28(1H, d, J=3.6Hz).

5 IR(CHCl₃): 3516, 3450, 3431, 1741, 1709, 1641, 1543, 1510, 1471 cm⁻¹.

[α]_D²³+42.6±0.8° (c=1.014, MeOH)

Elemental Analysis (C₂₉H₃₈FNO₃S)

Calcd.(%): C, 69.99; H, 7.29; N, 2.81; S, 6.44; F, 3.82

Found(%): C, 69.87; H, 7.29; N, 2.88; S, 6.50; F, 3.85

10 Compound II-71

mp.93-95°C

300MHz ¹H-NMR(CDCl₃) δ: 0.96(1H, d, J=10.2Hz), 1.13 and 1.23(each 3H, each s), 1.52-2.47(14H, m), 4.08(2H, s), 4.27(1H, m), 5.34-5.51(2H, m), 6.21(1H, d, J=8.7Hz), 7.18-7.32(6H, m), 7.61 and 7.66(each 1H, each s), 7.74(1H, d, J=8.4Hz).

15 IR(KBr): 3367, 1705, 1618, 1556, 1533, 1508 cm⁻¹.

[α]_D²³+60.4±0.8° (c=1.012, MeOH)

Elemental Analysis (C₃₂H₃₇NO₃S)

Calcd.(%): C, 74.53; H, 7.23; N, 2.72; S, 6.22

20 Found(%): C, 74.31; H, 7.37; N, 2.99; S, 6.10

Compound II-72

300MHz ¹H-NMR(CDCl₃) δ: 0.92(1H, d, J=10.2Hz), 1.06 and 1.19(each 3H, each s), 1.47-2.42(14H, m), 4.20(1H, m), 4.28(2H, s), 5.32-5.47(2H, m), 5.98(1H, d, J=8.7Hz), 6.80(1H, d, J=3.3Hz), 7.32-7.36(2H, m), 7.41-7.50(2H, m), 7.68(1H, s), 7.77-7.83(3H, m).

25 IR(CHCl₃): 3518, 3450, 3431, 1739, 1709, 1641, 1545, 1508, 1471 cm⁻¹.

[α]_D²³+42.7±0.8° (c=1.003, MeOH)

Elemental Analysis ($C_{32}H_{37}NO_3S \cdot 0.2H_2O$)

Calcd.(%): C, 74.01; H, 7.26; N, 2.70; S, 6.17

Found(%): C, 73.94; H, 7.30; N, 2.89; S, 6.15

Compound II-73

300MHz 1H -NMR($CDCl_3$) δ : 0.95(1H, d, $J=10.5Hz$), 1.11 and 1.22(each 3H, each s), 1.51-2.45(14H, m), 2.94-3.00(2H, m), 3.06-3.12(2H, m), 3.83(3H, s), 4.22(1H, m), 5.34-5.50(2H, m), 6.00(1H, d, $J=8.7Hz$), 6.73(1H, d, $J=3.6Hz$), 6.84-6.89(2H, m), 7.09(1H, dd, $J=1.5$ and $7.8Hz$), 7.20(1H, dt, $J=1.5$ and $7.8Hz$), 7.30(1H, d, $J=3.6Hz$).

IR($CHCl_3$): 3518, 3450, 3431, 1741, 1709, 1639, 1545, 1506, 1496, 1466 cm^{-1} .

$[\alpha]_D^{25} + 41.3 \pm 0.8^\circ$ ($c=1.007$, MeOH)

Elemental Analysis ($C_{30}H_{39}FNO_4S$)

Calcd.(%): C, 70.69; H, 7.71; N, 2.75; S, 6.29

Found(%): C, 70.42; H, 7.64; N, 2.78; S, 6.37

Compound II-74

300MHz 1H -NMR($CDCl_3$) δ : 0.94(1H, d, $J=10.2Hz$), 1.10 and 1.22(each 3H, each s), 1.53-2.48(14H, m), 2.96-3.04(2H, m), 3.07-3.16(2H, m), 4.22(1H, m), 5.34-5.52(2H, m), 6.04(1H, d, $J=8.7Hz$), 6.74(1H, d, $J=3.6Hz$), 6.77-6.85(2H, m), 7.05-7.11(2H, m), 7.31(1H, d, $J=3.6Hz$).

IR($CHCl_3$): 359, 3510, 3429, 3190, 1709, 1636, 1545, 1508, 1456 cm^{-1} .

$[\alpha]_D^{25} + 42.7 \pm 0.8^\circ$ ($c=1.009$, MeOH)

Elemental Analysis ($C_{29}H_{37}NO_4S \cdot 0.3H_2O$)

Calcd.(%): C, 69.51; H, 7.56; N, 2.80; S, 6.40

Found(%): C, 69.25; H, 7.43; N, 2.89; S, 6.43

Compound II-75

mp.91-92°C

300MHz 1H -NMR($CDCl_3$) δ : 0.95(1H, d, $J=10.5Hz$), 1.09 and 1.22(each 3H, each

s), 1.51-2.44(14H, m), 4.16(2H, s), 4.20(1H, m), 5.34-5.49(2H, m), 5.99(1H, d, J=8.7Hz), 6.79(1H, d, J=3.9Hz), 6.96(1H, dd, J=1.2 and 4.8Hz), 7.05(1H, m), 7.28(1H, dd, J=3.0 and 4.8Hz), 7.32(1H, d, J=3.9Hz).

IR(Nujol): 3408, 2677, 1703, 1626, 1541, 1514, 1246 cm^{-1} .

5 $[\alpha]_{\text{D}^{20}} +43.8 \pm 0.8^\circ$ (c=1.005, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{33}\text{NO}_3\text{S}_2$)

Calcd.(%): C, 66.21; H, 7.05; N, 2.97; S, 13.60

Found(%): C, 66.00; H, 7.81; N, 3.11; S, 13.69

Compound II-76

10 mp. 125-126°C

300MHz ^1H -NMR(CDCl_3) δ : 0.96(1H, d, J=10.2Hz), 1.13 and 1.23(each 3H, each s), 1.52-2.47(14H, m), 4.10(2H, s), 4.27(1H, m), 5.34-5.51(2H, m), 6.20(1H, d, J=9.0Hz), 7.19-7.33(6H, m), 7.62 and 7.69(each 1H, each s), 7.73(1H, d, J=8.4Hz).

15 IR(KBr): 3415, 3199, 1736, 1703, 1633, 1523 cm^{-1} .

$[\alpha]_{\text{D}^{25}} +53.3 \pm 0.8^\circ$ (c=1.002, MeOH)

Elemental Analysis ($\text{C}_{32}\text{H}_{37}\text{NO}_3\text{S} \cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 74.27; H, 7.25; N, 2.71; S, 6.23

Found(%): C, 74.19; H, 7.16; N, 2.81; S, 6.23

20 Compound II-77

mp. 98-101°C

300MHz ^1H -NMR(CDCl_3) δ : 0.97(1H, d, J=10.5Hz), 1.14 and 1.24(each 3H, each s), 1.53-2.47(14H, m), 4.08(2H, s), 4.27(1H, m), 5.35-5.51(2H, m), 6.21(1H, d, J=8.7Hz), 6.90(1H, dd, J=1.2 and 5.1Hz), 6.93(1H, m), 7.24-7.29(2H, m), 7.63(1H, s), 7.75(1H, d, J=8.1Hz).

IR(KBr): 3394, 3097, 1707, 1643, 1533, 1500 cm^{-1} .

$[\alpha]_{\text{D}^{25}} +58.7 \pm 1.0^\circ$ (c=1.006, MeOH)

Elemental Analysis ($C_{30}H_{35}NO_3S_2 \cdot 0.3H_2O$)

Calcd.(%): C, 68.35; H, 6.81; N, 2.66; S, 12.17

Found(%): C, 68.27; H, 6.76; N, 2.94; S, 12.17

Compound II-78

5 mp.106-109°C

300MHz 1H -NMR($CDCl_3$) δ : 0.97(1H, d, $J=10.2Hz$), 1.14 and 1.24(each 3H, each s), 1.53-2.47(14H, m), 4.26(2H, s), 4.27(1H, m), 5.35-5.51(2H, m), 6.22(1H, d, $J=8.7Hz$), 6.82(1H, m), 6.93(1H, dd, $J=3.6$ and $5.1Hz$), 7.16(1H, dd, $J=1.2$ and $5.1Hz$), 7.32(1H, dd, $J=8.1$ and $1.8Hz$), 7.68(2H, m), 7.76(1H, d, $J=8.1Hz$).

10 IR(KBr): 3396, 3070, 1707, 1645, 1535, 1500 cm^{-1} .

$[\alpha]_D^{25} +59.9 \pm 1.0^\circ$ ($c=1.005$, MeOH)

Elemental Analysis ($C_{30}H_{35}NO_3S_2 \cdot 0.2H_2O$)

Calcd.(%): C, 68.59; H, 6.79; N, 2.67; S, 12.21

Found(%): C, 68.57; H, 6.62; N, 2.76; S, 12.17

15 Compound II-79

300MHz 1H -NMR($CDCl_3$) δ : 0.94(1H, d, $J=10.2Hz$), 1.09 and 1.22(each 3H, each s), 1.49-2.44(14H, m), 4.12(2H, s), 4.23(1H, m), 5.34-5.49(2H, m), 6.09(1H, d, $J=8.7Hz$), 6.82 and 6.93(each 1H, each m), 7.13-7.17(2H, m), 7.34(1H, d, $J=1.5Hz$).

20 IR($CHCl_3$): 3512, 3448, 3431, 1739, 1709, 1645, 1550, 1508, 1471, 1456 cm^{-1} .

$[\alpha]_D^{25} +43.3 \pm 0.8^\circ$ ($c=1.007$, MeOH)

Elemental Analysis ($C_{26}H_{33}NO_3S_2 \cdot 0.1H_2O$)

Calcd.(%): C, 65.95; H, 7.07; N, 2.96; S, 13.54

Found(%): C, 66.12; H, 7.06; N, 3.04; S, 13.66

25 Compound II-80

300MHz 1H -NMR($CDCl_3$) δ : 0.94(1H, d, $J=10.5Hz$), 1.09 and 1.22(each 3H, each s), 1.49-2.44(14H, m), 3.95(2H, s), 4.22(1H, m), 5.34-5.49(2H, m), 6.06(1H, d,

J=8.7Hz), 6.92 and 6.96(each 1H, each m), 7.07(1H, d, J=1.5Hz), 7.28(1H, m), 7.30(1H, d, J=1.5Hz).

IR(CHCl₃): 3510, 3431, 1739, 1709, 1645, 1550, 1508, 1471 cm⁻¹.

[α]_D²⁵+41.1±0.8° (c=1.009, MeOH)

5 Elemental Analysis (C₂₆H₃₃NO₃S₂·0.2H₂O)

Calcd.(%): C, 65.70; H, 7.08; N, 2.95; S, 13.49

Found(%): C, 65.57; H, 6.97; N, 3.08; S, 13.63

Compound II-81

300MHz ¹H-NMR(CDCl₃) δ: 0.98(1H, d, J=10.5Hz), 1.10 and 1.23(each 3H, each s), 1.53-2.50(14H, m), 4.23(2H, s), 4.33(1H, m), 5.35-5.54(2H, m), 6.18(1H, d, J=8.7Hz), 6.92(1H, dd, J=1.2 and 4.8Hz), 7.01(1H, m), 7.22(1H, d, J=7.8Hz), 7.24(1H, dd, J=3.0 and 4.8Hz), 7.42(1H, d, J=7.8 and 8.1Hz), 7.79(1H, s), 8.18(1H, d, J=8.1Hz).

IR(CHCl₃): 3516, 3442, 2667, 1709, 1651, 1516, 1495, 1471 cm⁻¹.

[α]_D²⁶+50.9±0.9° (c=1.009, MeOH),

Elemental Analysis (C₃₀H₃₅NO₃S₂·0.2H₂O)

Calcd.(%): C, 68.59; H, 6.79; N, 2.67; S, 12.21

Found(%): C, 68.51; H, 6.69; N, 2.73; S, 12.39

Compound II-82

300MHz ¹H-NMR(CDCl₃) δ: 0.95(1H, d, J=10.2Hz), 1.10 and 1.22(each 3H, each s), 1.50-2.44(14H, m), 3.74(2H, s), 4.23(1H, m), 5.34-5.50(2H, m), 6.07(1H, d, J=8.0Hz), 6.23(1H, s), 7.08(1H, d, J=1.5Hz), 7.24(1H, s), 7.31(1H, d, J=1.5Hz), 7.36(1H, m).

IR(CHCl₃): 3510, 3448, 3431, 2663, 1709, 1645, 1550, 1508, 1471 cm⁻¹.

[α]_D²⁵+44.2±0.8° (c=1.001, MeOH)

Elemental Analysis (C₂₆H₃₃NO₄S·0.2H₂O)

Calcd.(%): C, 68.00; H, 7.33; N, 3.05; S, 6.98

Found(%): C, 68.00; H, 7.30; N, 3.15; S, 7.12

Compound II-83

300MHz ^1H -NMR(CDCl_3) δ : 0.92(1H, d, $J=10.2\text{Hz}$), 1.05 and 1.19(each 3H, each s), 1.48-2.40(14H, m), 4.17(1H, m), 4.58(2H, s), 5.31-5.46(2H, m), 5.96(1H, d, $J=8.7\text{Hz}$), 6.72 and 7.26(each 1H, each d, each $J=3.9\text{Hz}$), 7.37-7.51(4H, m), 7.79(1H, d, $J=8.1\text{Hz}$), 7.87 and 7.97(each 1H, each m).

IR(CHCl_3): 3516, 3450, 3431, 2667, 1739, 1709, 1641, 1543, 1508, 1471 cm^{-1} .

$[\alpha]_{\text{D}}^{25} +41.9 \pm 0.8^\circ$ (c=1.011, MeOH)

Elemental Analysis ($\text{C}_{32}\text{H}_{37}\text{NO}_3\text{S} \cdot 0.2\text{H}_2\text{O}$)

10 Calcd.(%): C, 74.01; H, 7.26; N, 2.70; S, 6.17

Found(%): C, 74.10; H, 7.13; N, 2.99; S, 6.15

Compound II-84

300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J=10.2\text{Hz}$), 1.05 and 1.20(each 3H, each s), 1.48-2.42(14H, m), 4.20(1H, m), 4.39(2H, m), 5.31-5.46(2H, m), 6.00(1H, d, $J=9.0\text{Hz}$), 6.96(1H, s), 7.30-7.33(2H, m), 7.40-7.50(3H, m), 7.78(1H, d, $J=8.1\text{Hz}$), 7.87 and 7.95(each 1H, each m).

IR(CHCl_3): 3518, 3448, 3431, 2665, 1738, 1709, 1645, 1549, 1508, 1471 cm^{-1} .

$[\alpha]_{\text{D}}^{24} +37.9 \pm 0.8^\circ$ (c=1.004, MeOH)

Elemental Analysis ($\text{C}_{32}\text{H}_{37}\text{NO}_3\text{S} \cdot 0.1\text{H}_2\text{O}$)

20 Calcd.(%): C, 74.27; H, 7.25; N, 2.71; S, 6.20

Found(%): C, 74.13; H, 7.18; N, 2.87; S, 6.26

Compound II-85

300MHz ^1H -NMR(CDCl_3) δ : 0.99(1H, d, $J=10.2\text{Hz}$), 1.11 and 1.24(each 3H, each s), 1.53-2.50(14H, m), 4.03(2H, s), 4.34(1H, m), 5.36-5.54(2H, m), 6.20(1H, d, $J=8.4\text{Hz}$), 7.24(1H, d, $J=8.4\text{Hz}$), 7.24(1H, d, $J=7.2\text{Hz}$), 7.30(1H, m), 7.35(1H, t, $J=1.8\text{Hz}$), 7.42(1H, dd, $J=7.2$ and 8.1Hz), 7.81(1H, s), 8.19(1H, d, $J=7.2\text{Hz}$).

IR(CHCl_3): 3518, 3442, 1739, 1709, 1651, 1516, 1496, 1471 cm^{-1} .

$[\alpha]_D^{25} + 54.3 \pm 1.0^\circ$ ($c = 1.002$, MeOH)

Elemental Analysis ($C_{30}H_{35}NO_4S \cdot 0.1H_2O$)

Calcd.(%): C, 71.00; H, 6.99; N, 2.76; S, 6.32

Found(%): C, 70.95; H, 6.82; N, 2.74; S, 6.35

5 Compound II-86

300MHz 1H -NMR($CDCl_3$) δ : 0.99(1H, d, $J = 10.5$ Hz), 1.16 and 1.24(each 3H, each s), 1.53-2.48(14H, m), 3.93(2H, s), 4.32(1H, m), 5.34-5.52(2H, m), 6.35(1H, d, $J = 8.7$ Hz), 7.31-7.42(2H, m), 7.56(1H, d, $J = 6.9$ Hz), 7.71(1H, dd, $J = 1.5$ and 8.1Hz), 7.78-7.83(2H, m), 7.92(1H, s).

10 IR($CHCl_3$): 3516, 3452, 3026, 2667, 1738, 1709, 1649, 1641, 1514, 1481, 1469, 1454 cm^{-1} .

$[\alpha]_D^{24} + 67.5 \pm 1.1^\circ$ ($c = 1.005$, MeOH)

Elemental Analysis ($C_{30}H_{35}NO_3 \cdot 0.1H_2O$)

Calcd.(%): C, 78.43; H, 7.72; N, 3.05

15 Found(%): C, 78.36; H, 7.99; N, 3.24

Compound II-87

300MHz 1H -NMR($CDCl_3$) δ : 0.96(1H, d, $J = 10.2$ Hz), 1.14 and 1.25(each 3H, each s), 1.53-2.47(14H, m), 4.25(1H, m), 5.37-5.52(2H, m), 6.23(1H, d, $J = 8.7$ Hz), 7.16-7.22(2H, m), 7.36(1H, m), 7.46(1H, s), 7.45-7.49(1H, m).

20 IR($CHCl_3$): 3516, 3446, 3429, 1734, 1703, 1652, 1606, 1521, 1496, 1457, 1419 cm^{-1} .

$[\alpha]_D^{25} + 72.8^\circ \pm 1.1^\circ$ ($c = 1.005$, MeOH),

Elemental Analysis ($C_{28}H_{31}NO_4S \cdot 0.3H_2O$)

Calcd.(%): C, 69.63; H, 6.59; N, 2.90; S, 6.63

25 Found(%): C, 69.51; H, 6.72; N, 3.30; S, 6.56

Compound II-88

300MHz 1H -NMR($CDCl_3$) δ : 0.97(1H, d, $J = 10.2$ Hz), 1.14 and 1.24(each 3H, each

s), 1.53-2.47(14H, m), 4.22((2H, s), 4.27(1H, m), 5.35-5.51(2H, m), 6.22(1H, d, J=8.7Hz), 6.94(1H, dd, J=1.2 and 4.8Hz), 7.05(1H, m), 7.21-7.26(2H, m), 7.35(1H, dd, J=7.5 and 8.1Hz), 7.71(1H, d, J=7.5Hz), 7.75(1H, s).
IR(CHCl₃): 3512, 3448, 3427, 2665, 1709, 1649, 1539, 1504, 1469 cm⁻¹.

5 $[\alpha]_{\text{D}}^{25} + 46.1 \pm 0.9^\circ$ (c=1.011, MeOH),

Elemental Analysis (C₃₀H₃₅NO₃S₂)

Calcd.(%): C, 69.06; H, 6.76; N, 2.68; S, 12.29

Found(%): C, 68.77; H, 6.84; N, 2.78; S, 12.30

Compound II-89

10 300MHz ¹H-NMR(CDCl₃) δ: 0.96(1H, d, J=10.2Hz), 1.14 and 1.23(each 3H, each s), 1.52-2.46(14H, m), 4.21((2H, s), 4.28(1H, m), 5.34-5.51(2H, m), 6.23(1H, d, J=9.0Hz), 6.94(1H, dd, J=1.2 and 4.8Hz), 7.05(1H, m), 7.21-7.26(2H, m), 7.35(1H, dd, J=7.5 and 8.1Hz), 7.71(1H, d, J=7.5Hz), 7.75(1H, s).
IR(CHCl₃): 3510, 3448, 3427, 2665, 1709, 1649, 1539, 1504, 1469, 1454 cm⁻¹.

15 $[\alpha]_{\text{D}}^{25} + 47.4 \pm 0.9^\circ$ (c=1.005, MeOH),

Elemental Analysis (C₃₂H₃₇NO₃S·0.1H₂O)

Calcd.(%): C, 74.27; H, 7.25; N, 2.71; S, 6.20

Found(%): C, 74.15; H, 7.14; N, 2.89; S, 6.26

Compound II-90

20 300MHz ¹H-NMR(CDCl₃) δ: 0.96(1H, d, J=10.2Hz), 1.14 and 1.24(each 3H, each s), 1.53-2.46(14H, m), 2.31(3H, s), 4.17((2H, s), 4.28(1H, m), 5.34-5.51(2H, m), 6.22(1H, d, J=9.0Hz), 7.09 and 7.15(each 2H, each d, J=7.8Hz), 7.19(1H, d, J=7.2Hz), 7.34(1H, dd, J=7.2 and 7.8Hz), 7.70(1H, d, J=7.8Hz), 7.75(1H, s).
IR(CHCl₃): 3510, 3448, 3427, 2669, 1709, 1649, 1537, 1504, 1469 cm⁻¹.

25 $[\alpha]_{\text{D}}^{25} + 45.6 \pm 0.9^\circ$ (c=1.005, MeOH),

Elemental Analysis (C₃₃H₃₉NO₃S·0.1H₂O)

Calcd.(%): C, 74.57; H, 7.43; N, 2.64; S, 6.03

Found(%): C, 74.46; H, 7.48; N, 2.78; S, 6.15

Compound II-91

300MHz ^1H -NMR(CDCl_3) δ : 0.97(1H, d, $J=10.2\text{Hz}$), 1.14 and 1.24(each 3H, each s), 1.53-2.47(14H, m), 2.31(3H, s), 4.28(1H, m), 4.40(2H, s), 5.35-5.51(2H, m),
6.23(1H, d, $J=8.7\text{Hz}$), 6.92-6.94(2H, m), 7.16(1H, dd, $J=1.5$ and 5.1Hz), 7.28(1H,
d, $J=7.5\text{Hz}$), 7.36(1H, t, $J=7.5\text{Hz}$), 7.72(1H, d, $J=7.5\text{Hz}$), 7.75(1H, s).

IR(CHCl_3): 3508, 3448, 3427, 2663, 1709, 1649, 1539, 1504, 1469 cm^{-1} .

$[\alpha]_{\text{D}}^{25}+46.2\pm0.9^\circ$ ($c=1.005$, MeOH),

Elemental Analysis ($\text{C}_{30}\text{H}_{35}\text{NO}_8\text{S}_2$)

Calcd.(%): C, 69.06; H, 6.76; N, 2.68; S, 12.29

Found(%): C, 68.84; H, 6.86; N, 2.79; S, 12.28

Compound II-92

300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=10.5\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.51-2.42(14H, m), 4.09(2H, s), 4.18(1H, m), 5.33-5.48(2H, m), 5.96(1H, d,
 $J=9.3\text{Hz}$), 6.54(1H, d, $J=3.6\text{Hz}$), 7.24-7.42(10H, m).

IR(CHCl_3): 3510, 3450, 3431, 1739, 1709, 1641, 1543, 1506, 1479, 1458 cm^{-1} .

$[\alpha]_{\text{D}}^{24.5}+39.4\pm0.8^\circ$ ($c=1.007$, MeOH)

Elemental Analysis ($\text{C}_{34}\text{H}_{39}\text{NO}_8\text{S}\cdot0.1\text{H}_2\text{O}$)

Calcd.(%): C, 75.13; H, 7.27; N, 2.58; S, 5.90

Found(%): C, 75.05; H, 7.32; N, 2.69; S, 6.17

Compound II-93

300MHz ^1H -NMR(CDCl_3) δ : 1.00(1H, d, $J=10.2\text{Hz}$), 1.15 and 1.26(each 3H, each s), 1.55-2.49(14H, m), 4.30(1H, m), 5.37-5.53(2H, m), 6.38(1H, d, $J=8.1\text{Hz}$),
7.32(1H, m), 7.49-7.58(3H, m), 7.64-7.67(2H, m), 7.92(1H, s).

IR(CHCl_3): 3514, 3446, 1714, 1655, 1618, 1514, 1469, 1446 cm^{-1} .

$[\alpha]_{\text{D}}^{25}+66.7\pm1.1^\circ$ ($c=1.005$, MeOH)

Elemental Analysis ($\text{C}_{30}\text{H}_{33}\text{NO}_4\cdot0.2\text{H}_2\text{O}$)

Calcd.(%): C, 75.83; H, 7.08; N, 2.95

Found(%): C, 75.69; H, 7.05; N, 3.08

Compound II-94

mp.103-104°C

5 300MHz ¹H-NMR(CDCl₃) δ: 0.93(1H, d, J=10.2Hz), 1.08 and 1.21(each 3H, each s), 1.49-2.42(14H, m), 3.79(3H, s), 4.07((2H, s), 4.20(1H, m), 5.33-5.48(2H, m), 5.98(1H, d, J=8.7Hz), 6.75(1H, d, J=3.6Hz), 6.85 and 7.15(each 2H, each d, J=8.4Hz), 7.31(1H, d, J=3.6Hz).

IR(CHCl₃): 3519, 3450, 3431, 1741, 1709, 1641, 1612, 1543, 1510, 1464 cm⁻¹.

10 [α]_D²⁵+43.8±0.8° (c=1.009, MeOH)

Elemental Analysis (C₂₉H₃₇NO₄S)

Calcd.(%): C, 70.27; H, 7.52; N, 2.83; S, 6.47

Found(%): C, 70.33; H, 7.55; N, 3.05; S, 6.46

Compound II-95

15 300MHz ¹H-NMR(CDCl₃) δ: 0.93(1H, d, J=10.5Hz), 1.07 and 1.21(each 3H, each s), 1.49-2.42(14H, m), 4.20(1H, m), 4.37(2H, s), 5.33-5.48(2H, m), 5.99(1H, d, J=8.4Hz), 6.82(1H, d, J=3.6Hz), 7.21(1H, s), 7.30(1H, d, J=3.6Hz), 7.34-7.37(2H, m), 7.69(1H, m), 7.86(1H, m).

IR(CHCl₃): 3512, 3450, 3431, 2671, 1739, 1709, 1643, 1543, 1508, 1471, 1460

20 cm⁻¹.

[α]_D²⁵+40.2±0.8° (c=1.005, MeOH),

Elemental Analysis (C₃₀H₃₅NO₃S₂·0.4H₂O)

Calcd.(%): C, 68.12; H, 6.82; N, 2.64; S, 12.12

Found(%): C, 68.05; H, 6.70; N, 2.87; S, 12.00

25 Compound II-96

300MHz ¹H-NMR(CDCl₃) δ: 0.92(1H, d, J=10.2Hz), 1.08 and 1.20(each 3H, each s), 1.50-2.43(14H, m), 4.04(2H, s), 4.20(1H, m), 5.32-5.49(2H, m), 6.03(1H, d,

J=9.0Hz), 6.75(1H, d, J=3.6Hz), 6.80 and 7.06(each 2H, each d, J=8.7Hz), 7.32(1H, d, J=3.6Hz).

IR(CHCl₃): 3446, 3510, 3182, 2673, 1709, 1635, 1614, 1545, 1512, 1471, 1458 cm⁻¹.

5 [α]_D²⁵+43.8±0.8° (c=1.000, MeOH),

Elemental Analysis (C₂₈H₃₅NO₄S)

Calcd.(%): C, 69.82; H, 7.32; N, 2.91; S, 6.66

Found(%): C, 69.57; H, 7.43; N, 3.00; S, 6.61

Compound II-97

10 300MHz ¹H-NMR(CDCl₃) δ: 1.00(1H, d, J=10.5Hz), 1.17 and 1.25(each 3H, each s), 1.55-2.50(14H, m), 3.93(2H, s), 4.32(1H, m), 5.35-5.49(2H, m), 6.37(1H, d, J=8.7Hz), 7.31-7.43(2H, m), 7.54-7.63(3H, m), 7.84(1H, d, J=7.2Hz), 8.16(1H, s).

IR(CHCl₃): 3514, 3450, 2667, 1709, 1651, 1572, 1514, 1481, 1452 cm⁻¹.

15 [α]_D²⁴+58.3±1.0° (c=1.003, MeOH)

Elemental Analysis (C₃₀H₃₅NO₃·0.1H₂O)

Calcd.(%): C, 78.43; H, 7.72; N, 3.05

Found(%): C, 78.26; H, 7.73; N, 3.28

Compound II-98

20 300MHz ¹H-NMR(CDCl₃) δ: 0.94(1H, d, J=10.2Hz), 1.09 and 1.21(each 3H, each s), 1.52-2.42(14H, m), 4.16(2H, s), 4.19(1H, m), 5.33-5.47(2H, m), 5.99(1H, d, J=9.3Hz), 6.78(1H, d, J=3.6Hz), 7.00-7.12(2H, m), 7.20-7.27(2H, m), 7.30(1H, d, J=3.6Hz).

IR(CHCl₃): 3510, 3450, 3431, 1741, 1709, 1643, 1543, 1508, 1456 cm⁻¹.

25 [α]_D²⁴+38.0±0.8° (c=1.03, CHCl₃)

Elemental Analysis (C₂₈H₃₄FNO₃S·0.5H₂O)

Calcd.(%): C, 68.26; H, 7.16; N, 2.86; S, 6.51; F, 3.86

Found(%): C, 68.24; H, 7.08; N, 2.93; S, 6.50; F, 3.80

Compound II-99

mp. 53-55°C

300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=10.2\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.51-2.42(14H, m), 4.07(2H, s), 4.19(1H, m), 5.05(2H, s), 5.33-5.48(2H, m), 5.98(1H, d, $J=9.0\text{Hz}$), 6.76(1H, d, $J=3.6\text{Hz}$), 6.92 and 7.15(each 2H, each d, $J=8.7\text{Hz}$), 7.31(1H, d, $J=3.6\text{Hz}$), 7.32-7.43(5H, m)
IR(CHCl_3): 3518, 3450, 3431, 1741, 1709, 1641, 1612, 1545, 1510, 1469, 1456 cm^{-1} .

[α] $_{\text{D}}^{24}+36.0\pm 0.8^\circ$ ($c=1.005$, MeOH),

Elemental Analysis ($\text{C}_{38}\text{H}_{41}\text{NO}_4\text{S}\cdot 0.4\text{H}_2\text{O}$)

Calcd.(%): C, 72.61; H, 7.28; N, 2.42; S, 5.54

Found(%): C, 72.58; H, 7.33; N, 2.65; S, 5.53

Compound II-100

300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=10.5\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.51-2.42(14H, m), 4.07(2H, s), 4.19(1H, m), 4.51-4.53(2H, m), 5.26-5.46(4H, m), 5.98(1H, d, $J=8.7\text{Hz}$), 6.05(1H, m), 6.76(1H, d, $J=3.6\text{Hz}$), 6.87 and 7.14(each 2H, each d, $J=8.7\text{Hz}$), 7.31(1H, d, $J=3.6\text{Hz}$).

IR(CHCl_3): 3511, 3450, 3431, 1741, 1709, 1641, 1612, 1543, 1508, 1471, 1458 cm^{-1} .

[α] $_{\text{D}}^{24}+39.7\pm 0.8^\circ$ ($c=1.008$, MeOH),

Elemental Analysis ($\text{C}_{31}\text{H}_{39}\text{NO}_4\text{S}\cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 70.88; H, 7.56; N, 2.67; S, 6.10

Found(%): C, 70.86; H, 7.60; N, 2.68; S, 6.17

Compound II-101

300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=10.2\text{Hz}$), 1.09 and 1.21(each 3H, each s), 1.50-2.43(14H, m), 4.04(2H, s), 4.20(1H, m), 5.33-5.49(2H, m), 5.94(2H, s),

5.98(1H, d, J=8.7Hz), 6.68-6.78(4H, m), 7.31(1H, d, J=3.9Hz).

IR(CHCl₃): 3518, 3450, 3431, 1739, 1709, 1641, 1543, 1504, 1489, 1444, 1250, 1041 cm⁻¹.

[α]_D²⁴+42.2±0.8° (c=1.010, MeOH),

5 Elemental Analysis (C₂₉H₃₅NO₅S)

Calcd.(%): C, 68.34; H, 6.92; N, 2.75; S, 6.29

Found(%): C, 68.19; H, 6.88; N, 2.86; S, 6.20

Compound II-102

mp.76-80°C

10 300MHz ¹H-NMR(CDCl₃) δ : 0.94(1H, d, J=9.9Hz), 1.09 and 1.21(each 3H, each s), 1.51-2.43(14H, m), 4.13(2H, s), 4.20(1H, m), 5.34-5.49(2H, m), 6.00(1H, d, J=8.4Hz), 6.78(1H, d, J=3.9Hz), 6.90-7.04(3H, m), 7.27(1H, m), 7.32(1H, d, J=3.9Hz).

IR(Nujol): 3408, 1703, 1631, 1514, 1250 cm⁻¹.

15 [α]_D²⁶+51.0±0.9° (c=1.001, MeOH),

Elemental Analysis (C₂₈H₃₄FNO₃S)

Calcd.(%): C, 69.54; H, 7.09; N, 2.90; S, 6.63; F, 3.93

Found(%): C, 69.77; H, 7.23; N, 2.95; S, 6.55; F, 3.93

Compound II-103

20 300MHz ¹H-NMR(CDCl₃) δ : 0.94(1H, d, J=10.2Hz), 1.09 and 1.22(each 3H, each s), 1.51-2.44(14H, m), 4.19(2H, s), 4.20(1H, m), 5.34-5.49(2H, m), 6.00(1H, d, J=8.4Hz), 6.78 and 7.32(each 1H, each d, each J=3.6Hz), 7.40-7.54(4H, m).

IR(CHCl₃): 3516, 3450, 3431, 1739, 1709, 1643, 1543, 1508, 1331, 1167, 1130 cm⁻¹.

25 [α]_D²⁵+39.5±0.8° (c=1.012, MeOH),

Elemental Analysis (C₂₉H₃₄F₃NO₃S)

Calcd.(%): C, 65.27; H, 6.42; N, 2.62; S, 6.01; F, 10.68

Found(%): C, 65.05; H, 6.46; N, 2.74; S, 6.02; F, 10.63

Compound II-104

300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=10.2\text{Hz}$), 1.09 and 1.21(each 3H, each s), 1.51-2.26(14H, m), 4.19(1H, m), 4.26(2H, s), 5.33-5.49(2H, m), 6.00(1H, d, $J=8.4\text{Hz}$), 6.79(1H, d, $J=3.9\text{Hz}$), 7.20-7.25(3H, m), 7.30(1H, d, $J=3.9\text{Hz}$), 7.37-7.40(1H, m).

IR(CHCl_3): 3516, 3450, 3431, 1741, 1709, 1643, 1543, 1508, 1471 cm^{-1} .

$[\alpha]_{\text{D}}^{26}+38.5\pm0.8^\circ$ ($c=1.00$, CHCl_3)

Elemental Analysis ($\text{C}_{28}\text{H}_{34}\text{FNO}_3\text{S}\cdot0.5\text{H}_2\text{O}$)

Calcd.(%): C, 66.06; H, 6.93; N, 2.75; S, 6.30; Cl, 6.96

Found(%): C, 66.21; H, 6.87; N, 2.97; S, 6.24; Cl, 6.75

Compound II-105

300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J=10.5\text{Hz}$), 1.07 and 1.20(each 3H, each s), 1.49-2.42(14H, m), 2.30(6H, s), 4.15(2H, s), 4.19(1H, m), 5.33-5.48(2H, m), 5.97(1H, d, $J=8.7\text{Hz}$), 6.56(1H, d, $J=3.9\text{Hz}$), 7.03-7.13(3H, m), 7.26(1H, d, $J=3.9\text{Hz}$).

IR(CHCl_3): 3518, 3450, 3431, 2671, 1739, 1709, 1641, 1543, 1506, 1471 cm^{-1} .

$[\alpha]_{\text{D}}^{24}+43.7\pm0.8^\circ$ ($c=1.004$, MeOH)

Elemental Analysis ($\text{C}_{30}\text{H}_{39}\text{FNO}_3\text{S}\cdot0.1\text{H}_2\text{O}$)

Calcd.(%): C, 72.72; H, 7.97; N, 2.83; S, 6.47

Found(%): C, 72.68; H, 7.95; N, 2.96; S, 6.48

Compound II-106

300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=9.9\text{Hz}$), 1.09 and 1.21(each 3H, each s), 1.53-2.50(14H, m), 4.19(1H, m), 4.32(2H, s), 5.34-5.47(2H, m), 6.00(1H, d, $J=8.7\text{Hz}$), 6.76(1H, d, $J=3.6\text{Hz}$), 7.28-7.39(3H, m), 7.50(1H, m), 7.66(1H, d, $J=3.6\text{Hz}$).

IR(CHCl_3): 3516, 3450, 3431, 2669, 1741, 1709, 1643, 1543, 1508, 1456, 1315,

1163, 1126, 1059, 1038 cm^{-1} .

$[\alpha]_{\text{D}}^{25} + 36.4 \pm 0.7^\circ$ ($c = 1.03$, CHCl_3)

Elemental Analysis ($\text{C}_{29}\text{H}_{34}\text{F}_3\text{NO}_5\text{S}$)

Calcd.(%): C, 65.27; H, 6.42; N, 2.62; S, 6.01

5 Found(%): C, 65.34; H, 6.30; N, 2.82; S, 6.00

Compound II-107

300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J = 10.2\text{Hz}$), 1.09 and 1.21(each 3H, each s), 1.50-2.42(14H, m), 3.21(2H, t, $J = 8.7\text{Hz}$), 4.02(2H, s), 4.20(1H, m), 4.59(2H, t, $J = 8.7\text{Hz}$), 5.34-5.49(2H, m), 6.01(1H, d, $J = 8.7\text{Hz}$), 6.80(1H, d, $J = 3.6\text{Hz}$),

10 7.06(1H, d, $J = 1.8\text{Hz}$), 7.19(1H, m), 7.30(1H, d, $J = 3.6\text{Hz}$).

IR(CHCl_3): 3512, 3450, 3431, 2667, 1739, 1709, 1641, 1543, 1508, 1460 cm^{-1} .

$[\alpha]_{\text{D}}^{25} + 35.7 \pm 0.8^\circ$ ($c = 1.002$, MeOH),

Elemental Analysis ($\text{C}_{30}\text{H}_{36}\text{BrNO}_4\text{S}$)

Calcd.(%): C, 61.43; H, 6.19; Br, 13.62; N, 2.39; S, 5.47

15 Found(%): C, 61.26; H, 6.11; Br, 13.54; N, 2.46; S, 5.47

Compound II-108

300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J = 10.5\text{Hz}$), 1.08 and 1.20(each 3H, each s), 1.49-2.42(14H, m), 3.22(2H, t, $J = 8.7\text{Hz}$), 4.07(2H, s), 4.20(1H, m), 4.57(2H, t, $J = 8.7\text{Hz}$), 5.33-5.48(2H, m), 5.99(1H, d, $J = 9.0\text{Hz}$), 6.79(1H, t, 7.5Hz), 6.80(1H, d, $J = 3.6\text{Hz}$), 6.95(1H, d, $J = 7.5\text{Hz}$), 7.09(1H, d, $J = 7.5\text{Hz}$), 7.30(1H, d, $J = 3.6\text{Hz}$).

20 d, $J = 3.6\text{Hz}$), 6.95(1H, d, $J = 7.5\text{Hz}$), 7.09(1H, d, $J = 7.5\text{Hz}$), 7.30(1H, d, $J = 3.6\text{Hz}$).

IR(CHCl_3): 3514, 3450, 3431, 2667, 1739, 1709, 1641, 1545, 1506, 1458 cm^{-1} .

$[\alpha]_{\text{D}}^{25} + 42.0 \pm 0.8^\circ$ ($c = 1.004$, MeOH),

Elemental Analysis ($\text{C}_{30}\text{H}_{37}\text{NO}_4\text{S} \cdot 0.1\text{H}_2\text{O}$)

Calcd.(%): C, 70.72; H, 7.36; N, 2.75; S, 6.29

25 Found(%): C, 70.59; H, 7.39; N, 2.95; S, 6.31

Compound II-109

300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J = 10.5\text{Hz}$), 1.07 and 1.20(each 3H, each

s), 1.49-2.42(14H, m), 4.20(1H, m), 4.27(2H, s), 5.32-5.48(2H, m), 5.99(1H, d, J=8.7Hz), 6.80(1H, d, J=3.6Hz), 7.24(1H, dd, J=1.5 and 8.1Hz), 7.31(1H, dd, J=0.6 and 5.4Hz), 7.33(1H, d, J=3.6Hz), 7.40(1H, d, J=5.4Hz), 7.73(1H, m), 7.77(1H, d, J=8.1Hz) .

5 IR(CHCl₃): 3516, 3450, 3431, 1741, 1709, 1641, 1543, 1508, 1469 cm⁻¹.

[α]_D²⁵+41.5±0.8° (c=1.002, MeOH),

Elemental Analysis (C₃₀H₃₅NO₃S₂·0.3H₂O)

Calcd.(%): C, 68.36; H, 6.81; N, 2.66; S, 12.17

Found(%): C, 68.37; H, 6.73; N, 2.86; S, 12.21

10 Compound II-110

300MHz ¹H-NMR(CDCl₃) δ: 0.92(1H, d, J=10.5Hz), 1.07 and 1.19(each 3H, each s), 1.47-2.41(14H, m), 4.20(1H, m), 4.24(2H, s), 5.32-5.47(2H, m), 6.00(1H, d, J=8.7Hz), 6.78(1H, d, J=3.9Hz), 7.21(1H, dd, J=1.8 and 8.4Hz), 7.26(1H, d, J=5.7Hz), 7.33(1H, d, J=3.9Hz), 7.43(1H, d, J=5.7Hz), 7.67(1H, d, J=1.8Hz), 7.81(1H, d, J=8.4Hz) .

15 IR(CHCl₃): 3516, 3450, 3431, 1739, 1709, 1641, 1545, 1458 cm⁻¹.

[α]_D²⁵+40.9±0.8° (c=1.002, MeOH),

Elemental Analysis (C₃₀H₃₅NO₃S₂·0.3H₂O)

Calcd.(%): C, 68.36; H, 6.81; N, 2.66; S, 12.17

20 Found(%): C, 68.30; H, 6.68; N, 2.94; S, 12.25

Compound II-111

300MHz ¹H-NMR(CDCl₃) δ: 0.93(1H, d, J=10.2Hz), 1.06 and 1.19(each 3H, each s), 1.48-2.41(14H, m), 4.19(1H, m), 4.39(2H, s), 5.32-5.47(2H, m), 5.99(1H, d, J=8.7Hz), 6.86(1H, d, J=3.6Hz), 7.21(1H, d, J=7.2Hz), 7.30(1H, d, J=3.6Hz), 7.35(1H, t, J=7.2Hz), 7.36(1H, d, J=5.4Hz), 7.42(1H, d, J=5.4Hz), 7.74(1H, d, J=7.2Hz) .

IR(CHCl₃): 3516, 3450, 3431, 1739, 1709, 1641, 1543, 1508, 1471, 1460 cm⁻¹.

$[\alpha]_{\text{D}}^{25} + 42.0 \pm 0.8^\circ$ ($c=1.001$, MeOH),

Elemental Analysis ($\text{C}_{80}\text{H}_{36}\text{NO}_3\text{S}_2 \cdot 0.3\text{H}_2\text{O}$)

Calcd.(%): C, 68.36; H, 6.81; N, 2.66; S, 12.17

Found(%): C, 68.63; H, 6.78; N, 2.84; S, 12.26

5 Compound II-112

300MHz ^1H -NMR(CDCl_3) δ : 0.92(1H, d, $J=10.2\text{Hz}$), 1.07 and 1.20(each 3H, each s), 1.52-2.47(14H, m), 4.20(1H, m), 4.23(2H, s), 5.32-5.51(2H, m), 6.08(1H, d, $J=8.7\text{Hz}$), 6.75(1H, d, $J=3.6\text{Hz}$), 6.95(1H, dd, $J=2.4$ and 9.0Hz), 7.10(1H, d, $J=2.4\text{Hz}$), 7.19(1H, s), 7.27(1H, d, $J=3.6\text{Hz}$), 7.66(1H, d, $J=9.0\text{Hz}$).

10 IR(CHCl_3): 3427, 3249, 1707, 1633, 1601, 1545, 1510, 1442 cm^{-1} .

$[\alpha]_{\text{D}}^{25} + 40.1 \pm 0.8^\circ$ ($c=1.007$, MeOH),

Elemental Analysis ($\text{C}_{80}\text{H}_{35}\text{NO}_4\text{S}_2 \cdot 0.3\text{H}_2\text{O}$)

Calcd.(%): C, 66.34; H, 6.61; N, 2.58; S, 11.81

Found(%): C, 66.21; H, 6.70; N, 2.70; S, 11.75

15 Compound II-113

300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J=10.2\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.53-2.45(14H, m), 4.17(1H, m), 4.24(2H, m), 4.69(2H, m), 5.35-5.47(2H, m), 6.02(1H, d, $J=9.3\text{Hz}$), 6.72(1H, d, $J=3.9\text{Hz}$), 7.23-7.31(4H, m), 7.40(1H, m).

IR(CHCl_3): 3516, 3450, 3431, 1709, 1641, 1527, 1508, 1456 cm^{-1} .

20 $[\alpha]_{\text{D}}^{26} + 32.7 \pm 0.7^\circ$ ($c=1.00$, CHCl_3)

Compound II-114

300MHz ^1H -NMR(CDCl_3) δ : 0.92(1H, d, $J=10.2\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.54-2.48(18H, m), 3.20 (4H, m), 4.11-4.22(3H, m), 4.43(2H, s), 5.33-5.55(2H, m), 5.99(1H, d, $J=8.4\text{Hz}$), 6.67(1H, d, $J=4.2\text{Hz}$), 7.30-7.43(4H, m), 7.64(1H, d, $J=4.2\text{Hz}$).

IR(CHCl_3): 3514, 3448, 3420, 2555, 2459, 1711, 1643, 1543, 1508, 1456 cm^{-1} .

$[\alpha]_{\text{D}}^{26} + 20.4 \pm 0.6^\circ$ ($c=1.05$, CHCl_3)

Elemental Analysis ($C_{33}H_{44}N_2O_5S \cdot 1.1H_2O$)

Calcd.(%): C, 69.71; H, 8.19; N, 4.93; S, 5.64

Found(%): C, 69.69; H, 8.08; N, 4.92; S, 5.54

Compound II-115

- 5 300MHz 1H -NMR($CDCl_3$) δ : 0.93(1H, d, $J=10.5$ Hz), 1.07 and 1.21(each 3H, each s), 1.53-2.46(14H, m), 2.49(6H, s), 3.79(1H, d, $J=10.8$ Hz), 3.84(1H, d, $J=10.8$ Hz), 4.19(1H, m), 4.35(1H, d, $J=20.1$ Hz), 4.37(1H, d, $J=20.1$ Hz), 5.36-5.54 (2H, m), 5.94(1H, d, $J=9.0$ Hz), 6.71(1H, d, $J=3.6$ Hz), 7.25-7.43(5H, m).

IR($CHCl_3$): 3516, 3448, 3429, 2553, 2459, 1711, 1643, 1545, 1506, 1471 cm^{-1} .

- 10 $[\alpha]_D^{26} + 20.9 \pm 0.6^\circ$ ($c=1.03$, $CHCl_3$)

Elemental Analysis ($C_{31}H_{42}N_2O_5S \cdot 3.1H_2O$)

Calcd.(%): C, 64.35; H, 8.40; N, 4.84; S, 5.54

Found(%): C, 64.36; H, 7.87; N, 4.63; S, 5.17

Compound II-116

- 15 300MHz 1H -NMR($CDCl_3$) δ : 0.98(1H, d, $J=10.5$ Hz), 1.13 and 1.24(each 3H, each s), 1.53-2.47(14H, m), 3.20-3.27(4H, m), 4.28(1H, m), 5.35-5.51(2H, m), 6.32(1H, d, $J=8.4$ Hz), 7.24(1H, d, $J=7.5$ Hz), 7.34 and 7.46(each 1H, each m), 7.55(1H, dd, $J=1.8$ and 8.4Hz), 7.67(1H, d, $J=1.8$ Hz), 8.00-8.04(2H, m).

IR($CHCl_3$): 3518, 3448, 1709, 1649, 1597, 1514, 1294 cm^{-1} .

- 20 $[\alpha]_D^{25} + 58.8 \pm 1.0^\circ$ ($c=1.001$, MeOH)

Elemental Analysis ($C_{32}H_{37}NO_4 \cdot 0.2H_2O$)

Calcd.(%): C, 76.37; H, 7.49; N, 2.78

Found(%): C, 76.33; H, 7.50; N, 2.88

Compound II-117

- 25 300MHz 1H -NMR($CDCl_3$) δ : 0.95(1H, d, $J=10.2$ Hz), 1.07 and 1.22(each 3H, each s), 1.51-2.43(14H, m), 3.97(2H, s), 4.21(1H, m), 5.34-5.49(2H, m), 6.07(1H, d, $J=3.3$ Hz), 6.38(1H, d, $J=9.3$ Hz), 6.98-7.04(3H, m), 7.13-7.22(2H, m).

IR(CHCl₃): 3518, 3438, 1739, 1709, 1651, 1606, 1549, 1508 cm⁻¹.

[α]_D²⁶+57.2±1.0° (c=1.016, MeOH)

Elemental Analysis (C₂₈H₃₄FNO₄·0.1H₂O)

Calcd.(%): C, 71.65; H, 7.34; N, 2.98; F, 4.05

5 Found(%): C, 71.57; H, 7.44; N, 3.14; F, 4.01

Compound II-118

300MHz ¹H-NMR(CDCl₃) δ : 0.96(1H, d, J=10.5Hz), 1.07 and 1.21(each 3H, each s), 1.52-2.43(14H, m), 4.00(2H, s), 4.21(1H, m), 5.34-5.49(2H, m), 6.09(1H, d, J=3.3Hz), 6.40(1H, d, J=9.6Hz), 7.01(1H, d, J=3.3Hz), 7.22-7.36(5H, m).

10 IR(CHCl₃): 3516, 3439, 2667, 1738, 1709, 1651, 1606, 1547, 1498 cm⁻¹.

[α]_D²⁴+62.2±1.0° (c=1.007, MeOH)

Elemental Analysis (C₂₈H₃₅NO₄·0.2H₂O)

Calcd.(%): C, 74.21; H, 7.87; N, 3.09

Found(%): C, 74.14; H, 7.81; N, 3.25

15 Compound II-119

300MHz ¹H-NMR(CDCl₃) δ : 0.92(1H, d, J=10.2Hz), 1.07 and 1.20(each 3H, each s), 1.48-2.42(14H, m), 4.19(1H, m), 4.42(2H, s), 5.32-5.47(2H, m), 5.98(1H, d, J=8.7Hz), 6.78(1H, d, J=2.1Hz), 6.84(1H, d, J=3.9Hz), 7.13(1H, dd, J=1.5 and 7.5Hz), 7.19(1H, t, J=7.5Hz), 7.30(1H, d, J=3.9Hz), 7.50(1H, dd, J=1.5 and 7.5Hz), 7.63(1H, d, 2.1Hz).

20 IR(CHCl₃): 3516, 3450, 3431, 1741, 1709, 1641, 1543, 1508, 1471, 1458, 1427 cm⁻¹.

[α]_D²⁵+43.5±0.8° (c=1.010, MeOH),

Elemental Analysis (C₃₀H₃₅NO₄S·0.2H₂O)

25 Calcd.(%): C, 70.75; H, 7.01; N, 2.75; S, 6.30

Found(%): C, 70.80; H, 7.02; N, 2.96; S, 6.26

Compound II-120

300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=10.2\text{Hz}$), 1.09 and 1.22(each 3H, each s), 1.55-2.41(14H, m), 2.95(3H, s), 4.18-4.21(3H, m), 4.45(2H, s), 5.39-5.43(2H, m), 6.00(1H, d, $J=8.7\text{Hz}$), 6.63-6.71(4H, m), 7.16-7.26(6H, m), 7.32(1H, m).

IR(CHCl_3): 3516, 3450, 3431, 1739, 1709, 1643, 1599, 1543, 1505, 1454 cm^{-1} .

5 $[\alpha]_{\text{D}^{26}}+32.2\pm0.7^\circ$ ($c=1.00$, CHCl_3)

Elemental Analysis ($\text{C}_{36}\text{H}_{44}\text{N}_2\text{O}_3\cdot0.6\text{H}_2\text{O}$)

Calcd.(%): C, 72.59; H, 7.65; N, 4.70; S, 5.38

Found(%): C, 72.68; H, 7.47; N, 4.74; S, 5.29

Compound II-121

10 300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J=9.9\text{Hz}$), 1.07 and 1.20(each 3H, each s), 1.49-2.41(14H, m), 4.19(1H, m), 4.30(2H, s), 5.32-5.48(2H, m), 5.99(1H, d, $J=9.0\text{Hz}$), 6.82(1H, d, $J=3.6\text{Hz}$), 7.24(1H, dd, $J=1.5$ and 8.1Hz), 7.30-7.36(2H, m), 7.41-7.47(2H, m), 7.55(1H, d, $J=8.1\text{Hz}$), 7.87-7.94(2H, m).

IR(CHCl_3): 3510, 3450, 3431, 2669, 1739, 1709, 1641, 1545, 1506, 1458, 1429

15 cm^{-1} .

$[\alpha]_{\text{D}^{24}}+39.4\pm0.8^\circ$ ($c=1.002$, MeOH)

Elemental Analysis ($\text{C}_{34}\text{H}_{37}\text{NO}_4\text{S}\cdot0.1\text{H}_2\text{O}$)

Calcd.(%): C, 73.25; H, 6.73; N, 2.51; S, 5.75

Found(%): C, 73.13; H, 6.53; N, 2.69; S, 5.79

20 Compound II-122

300MHz ^1H -NMR(CDCl_3) δ : 0.93(1H, d, $J=10.2\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.50-2.43(14H, m), 3.79 and 3.86(each 3H, each s), 4.14(2H, s), 4.19(1H, m), 5.33-5.48(2H, m), 5.96(1H, d, $J=8.4\text{Hz}$), 6.78-6.85(3H, m), 7.00(1H, t, $J=8.1\text{Hz}$), 7.30(1H, d, $J=3.6\text{Hz}$).

25 IR(CHCl_3): 3516, 3450, 3431, 2667, 1739, 1709, 1641, 1543, 1506, 1481, 1273, 1076 cm^{-1} .

$[\alpha]_{\text{D}^{26}}+39.6\pm0.8^\circ$ ($c=1.007$, MeOH)

Elemental Analysis ($C_{30}H_{39}NO_5S \cdot 0.1H_2O$)

Calcd.(%): C, 68.31; H, 7.49; N, 2.66; S, 6.08

Found(%): C, 68.17; H, 7.50; N, 2.76; S, 6.13

Compound II-123

- 5 300MHz 1H -NMR($CDCl_3$) δ : 0.94(1H, d, $J=10.2Hz$), 1.09 and 1.22(each 3H, each s), 1.51-2.45(14H, m), 2.39(3H, s), 4.15(2H, s), 4.21(1H, m), 5.34-5.50(2H, m), 5.87(1H, s), 6.04(1H, d, $J=8.7Hz$), 6.86(1H, d, $J=3.6Hz$), 7.32(1H, d, $J=3.6Hz$).
IR($CHCl_3$): 3514, 3450, 3431, 1709, 1645, 1608, 1545, 1508, 1471, 1456 cm^{-1} .
[α] $_D^{25}+47.0\pm0.9^\circ$ ($c=1.017$, MeOH),

10 Elemental Analysis ($C_{28}H_{34}N_2O_4S \cdot 0.3H_2O$)

Calcd.(%): C, 65.60; H, 7.33; N, 5.88; S, 6.74

Found(%): C, 65.49; H, 7.31; N, 6.00; S, 6.86

Compound II-124

- 15 300MHz 1H -NMR($CDCl_3$) δ : 0.93(1H, d, $J=10.2Hz$), 1.08 and 1.21(each 3H, each s), 1.50-2.42(14H, m), 2.33(3H, s), 3.82(3H, s), 4.07(2H, s), 4.18(1H, m), 5.33-5.48(2H, m), 5.96(1H, d, $J=8.7Hz$), 6.69(1H, s), 6.74(1H, d, $J=7.8Hz$), 6.76(1H, d, $J=3.6Hz$), 7.03(1H, d, $J=7.8Hz$), 7.28(1H, d, $J=3.6Hz$).
IR($CHCl_3$): 3516, 3450, 3431, 1741, 1709, 1639, 1614, 1543, 1506, 1464 cm^{-1} .
[α] $_D^{24}+43.3\pm0.8^\circ$ ($c=1.012$, MeOH),

20 Elemental Analysis ($C_{30}H_{39}NO_4S \cdot 0.1H_2O$)

Calcd.(%): C, 70.45; H, 7.73; N, 2.74; S, 6.27

Found(%): C, 70.35; H, 7.78; N, 2.96; S, 6.20

Compound II-125

- 25 300MHz 1H -NMR($CDCl_3$) δ : 0.93(1H, d, $J=10.2Hz$), 1.07 and 1.21(each 3H, each s), 1.49-2.43(14H, m), 3.84(3H, s), 4.20(1H, m), 4.32(2H, s), 5.33-5.48(2H, m), 5.99(1H, d, $J=8.4Hz$), 6.83(1H, d, $J=3.6Hz$), 7.01(1H, dd, $J=2.4$ and $8.7Hz$), 7.12(1H, d, $J=2.4Hz$), 7.21(1H, s), 7.31(1H, d, $J=3.6Hz$), 7.71(1H, d, $J=8.7Hz$).

IR(CHCl₃): 3516, 3450, 3431, 1739, 1709, 1643, 1601, 1543, 1508, 1458, 1427
cm⁻¹.

$[\alpha]_D^{25} + 38.5 \pm 0.8^\circ$ (c=1.004, MeOH),

Elemental Analysis (C₃₁H₃₇NO₄S₂·0.1H₂O)

5 Calcd.(%): C, 67.26; H, 6.72; N, 2.53; S, 11.58

Found(%): C, 67.24; H, 6.73; N, 2.77; S, 11.51

Compound II-126

300MHz ¹H-NMR(CDCl₃) δ: 0.94(1H, d, J=10.5Hz), 1.07 and 1.20(each 3H, each
s), 1.50-2.42(14H, m), 3.87(2H, s), 4.18(1H, m), 4.20(2H, s), 5.32-5.48(2H, m),
10 5.98(1H, d, J=7.2Hz), 6.81(1H, d, J=3.6Hz), 7.23-7.41(5H, m), 7.53(1H, d,
J=7.5Hz), 7.71-7.77(2H, m).

IR(CHCl₃): 3514, 3450, 3431, 1739, 1709, 1641, 1545, 1506, 1469, 1456 cm⁻¹.

$[\alpha]_D^{25} + 38.5 \pm 0.8^\circ$ (c=1.007, MeOH)

Elemental Analysis (C₃₅H₃₉NO₃S·0.2H₂O)

15 Calcd.(%): C, 75.42; H, 7.13; N, 2.51; S, 5.75

Found(%): C, 75.36; H, 7.18; N, 2.79; S, 5.50

Compound II-127

300MHz ¹H-NMR(CDCl₃) δ: 0.96(1H, d, J=10.2Hz), 1.10 and 1.21(each 3H, each
s), 1.52-2.44(14H, m), 3.14-3.24(4H, m), 4.13(2H, s), 4.24(1H, m), 5.32-5.49(2H,
20 m), 6.19(1H, d, J=9.0Hz), 7.06-7.18(4H, m), 7.22(1H, d, J=8.1Hz), 7.39(1H, dd,
J=1.8 and 8.1Hz), 7.51(1H, d, J=1.8Hz).

IR(CHCl₃): 3516, 3452, 1738, 1709, 1649, 1570, 1518, 1491, 1471 cm⁻¹.

$[\alpha]_D^{25} + 54.4 \pm 0.9^\circ$ (c=1.002, MeOH)

Elemental Analysis (C₃₂H₃₉NO₄·0.1H₂O)

25 Calcd.(%): C, 78.85; H, 8.11; N, 2.87

Found(%): C, 78.74; H, 8.14; N, 3.17

Compound II-128

300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=10.2\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.50-2.43(14H, m), 3.83, 3.85 and 3.86(each 3H, each s), 4.07(2H, s), 4.19(1H, m), 5.33-5.49(2H, m), 5.97(1H, d, $J=9.0\text{Hz}$), 6.62(1H, d, $J=8.7\text{Hz}$), 6.76(1H, td, $J=0.9$ and 3.6Hz), 6.87(1H, d, $J=8.7\text{Hz}$), 7.30(1H, d, $J=3.6\text{Hz}$).

5 IR(CHCl_3): 3516, 3450, 3431, 1739, 1709, 1641, 1603, 1543, 1495, 1469, 1277, 1259, 1097 cm^{-1} .

$[\alpha]_{\text{D}}^{26}+38.4\pm0.8^\circ$ ($c=1.013$, MeOH)

Elemental Analysis ($\text{C}_{31}\text{H}_{41}\text{NO}_6\text{S}\cdot0.2\text{H}_2\text{O}$)

Calcd.(%): C, 66.57; H, 7.46; N, 2.50; S, 5.73

10 Found(%): C, 66.54; H, 7.42; N, 2.61; S, 5.71

Compound II-129

300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=10.2\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.50-2.42(14H, m), 2.18 and 2.29(each 3H, each s), 4.14(2H, s), 4.19(1H, m), 5.33-5.49(2H, m), 5.96(1H, d, $J=8.4\text{Hz}$), 6.67(1H, td, $J=0.9$ and 3.6Hz), 7.02-
15 7.12(3H, m), 7.29(1H, t, $J=3.6\text{Hz}$).

IR(CHCl_3): 3516, 3450, 3431, 1741, 1709, 1641, 1543, 1506, 1471 cm^{-1} .

$[\alpha]_{\text{D}}^{26}+42.8\pm0.8^\circ$ ($c=1.007$, MeOH)

Elemental Analysis ($\text{C}_{30}\text{H}_{39}\text{NO}_3\text{S}$)

Calcd.(%): C, 72.98; H, 7.96; N, 2.84; S, 6.50

20 Found(%): C, 72.67; H, 7.98; N, 2.94; S, 6.38

Compound II-130

300MHz ^1H -NMR(CDCl_3) δ : 0.95(1H, d, $J=10.2\text{Hz}$), 1.09 and 1.22(each 3H, each s), 1.51-2.44(14H, m), 3.83(3H, s), 3.84(6H, s), 4.07(2H, s), 4.20(1H, m), 5.34-5.49(2H, m), 6.00(1H, d, $J=8.7\text{Hz}$), 6.45(2H, s), 6.79 and 7.31(each 1H, each d,
25 each $J=3.6\text{Hz}$).

IR(CHCl_3): 3516, 3450, 3431, 1741, 1709, 1641, 1593, 1543, 1506, 1464, 1421, 1331, 1240, 1130 cm^{-1} .

$[\alpha]_{\text{D}}^{24} + 38.3 \pm 0.8^\circ$ ($c=1.004$, MeOH)

Elemental Analysis ($\text{C}_{31}\text{H}_{41}\text{NO}_6\text{S} \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 66.57; H, 7.46; N, 2.50; S, 5.73

Found(%): C, 66.48; H, 7.37; N, 2.59; S, 5.63

5 Compound II-131

300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=10.2\text{Hz}$), 1.08 and 1.21(each 3H, each s), 1.50-2.43(14H, m), 4.08(2H, s), 4.20(1H, m), 5.33-5.49(2H, m), 5.95(2H, s), 5.99(1H, d, $J=8.7\text{Hz}$), 6.68-6.82(4H, m), 7.30(1H, d, $J=3.6\text{Hz}$).

IR(CHCl_3): 3512, 3450, 3431, 1739, 1709, 1641, 1545, 1506, 1460, 1252, 1063

10 cm^{-1} .

$[\alpha]_{\text{D}}^{24} + 41.8 \pm 0.8^\circ$ ($c=1.007$, MeOH)

Elemental Analysis ($\text{C}_{29}\text{H}_{35}\text{NO}_6\text{S}$)

Calcd.(%): C, 68.34; H, 6.92; N, 2.75; S, 6.29

Found(%): C, 68.04; H, 6.90; N, 2.79; S, 6.29

15 Compound II-132

300MHz ^1H -NMR(CDCl_3) δ : 0.92(1H, d, $J=10.5\text{Hz}$), 1.09 and 1.21(each 3H, each s), 1.51-2.45(14H, m), 2.14(3H, s), 4.08(2H, s), 4.18(1H, m), 5.32-5.50(2H, m), 6.08(1H, d, $J=8.4\text{Hz}$), 6.76(1H, d, $J=3.6\text{Hz}$), 6.97(1H, d, $J=7.8\text{Hz}$), 7.24(1H, t, $J=8.4\text{Hz}$), 7.30(1H, d, $J=3.6\text{Hz}$), 7.38-7.40(2H, m), 7.74(1H, br s).

20 IR(CHCl_3): 3514, 3435, 3311, 1705, 1639, 1612, 1534, 1508, 1439 cm^{-1} .

$[\alpha]_{\text{D}}^{25} + 40.1 \pm 0.8^\circ$ ($c=1.008$, MeOH)

Elemental Analysis ($\text{C}_{30}\text{H}_{38}\text{N}_2\text{O}_4\text{S} \cdot 0.4\text{H}_2\text{O}$)

Calcd.(%): C, 68.00; H, 7.38; N, 5.29; S, 6.05

Found(%): C, 68.11; H, 7.17; N, 5.22; S, 5.93

25 Compound II-133

300MHz ^1H -NMR(CDCl_3) δ : 0.94(1H, d, $J=10.5\text{Hz}$), 1.09 and 1.22(each 3H, each s), 1.53-2.50(14H, m), 2.99(3H, s), 4.13(2H, s), 4.21(1H, m), 5.34-5.52(2H, m),

6.02(1H, d, J=9.3Hz), 6.80(1H, d, J=3.9Hz), 7.04-7.07(2H, m), 7.16(1H, m),
7.25-7.32(3H, m).

IR(CHCl₃): 3510, 3440, 3431, 3371, 1709, 1639, 1608, 1543, 1508, 1471, 1386,
1335, 1151 cm⁻¹.

5 $[\alpha]_{\text{D}^{24}} +38.3 \pm 0.8^\circ$ (c=1.006, MeOH)

Elemental Analysis (C₂₉H₃₈N₂O₆S₂·0.2H₂O)

Calcd.(%): C, 61.94; H, 6.88; N, 4.98; S, 11.40

Found(%): C, 61.99; H, 6.92; N, 4.95; S, 10.97

Compound II-134

10 300MHz ¹H-NMR(CDCl₃) δ: 0.94(1H, d, J=10.2Hz), 1.09 and 1.21(each 3H, each
s), 1.50-2.44(14H, m), 4.21(1H, m), 4.32(2H, s), 5.34-5.50(2H, m), 6.01(1H, d,
J=9.0Hz), 6.86, 6.88 and 7.14(each 1H, each d, each J=3.6Hz), 7.23-7.37(4H, m),
7.53-7.56(2H, m).

Compound II-135

15 300MHz ¹H-NMR(CDCl₃) δ: 0.94(1H, d, J=10.2Hz), 1.08 and 1.21(each 3H, each
s), 1.50-2.43(14H, m), 4.08(2H, s), 4.17-4.30(5H, m), 5.33-5.49(2H, m), 5.98(1H,
d, J=8.4Hz), 6.71-6.80(4H, m), 7.28(1H, d, J=3.6Hz).

IR(CHCl₃): 3516, 3450, 3431, 1739, 1709, 1639, 1602, 1543, 1506, 1475, 1456,
1284, 1090 cm⁻¹.

20 $[\alpha]_{\text{D}^{24.5}} +40.2 \pm 0.8^\circ$ (c=1.011, MeOH)

Elemental Analysis (C₃₀H₃₇NO₆S·0.2H₂O)

Calcd.(%): C, 68.34; H, 7.15; N, 2.66; S, 6.08

Found(%): C, 68.35; H, 7.03; N, 2.71; S, 6.17

Compound II-136

25 300MHz ¹H-NMR(CDCl₃) δ: 0.94(1H, d, J=10.2Hz), 1.08 and 1.21(each 3H, each
s), 1.50-2.43(14H, m), 2.31 and 3.70(each 3H, each s), 4.15(2H, s), 4.19(1H, m),
5.33-5.49(2H, m), 5.98(1H, d, J=8.7Hz), 6.77(1H, d, J=3.9Hz), 6.96-7.11(3H, m),

7.31(1H, d, J=3.9Hz).

IR(CHCl₃): 3516, 3450, 3431, 2669, 1738, 1709, 1641, 1545, 1506, 1471, 1259, 1011 cm⁻¹.

[α]_D²⁴+41.2±0.8° (c=1.003, MeOH)

5 Elemental Analysis (C₃₀H₃₉NO₄S)

Calcd.(%): C, 70.69; H, 7.71; N, 2.75; S, 6.29

Found(%): C, 70.41; H, 7.76; N, 2.97; S, 6.04

Compound II-137

300MHz ¹H-NMR(CDCl₃) δ : 0.93(1H, d, J=10.2Hz), 1.08 and 1.21(each 3H, each
10 s), 1.51-2.42(14H, m), 2.16(3H, s), 4.09(2H, s), 4.18(1H, m), 5.32-5.50(2H, m),
6.01(1H, d, J=8.7Hz), 6.77(1H, d, J=3.6Hz), 7.17(2H, d, J=8.1Hz), 7.32(1H, d,
J=3.6Hz), 7.43(1H, br s), 7.44(2H, d, J=8.1Hz).

IR(CHCl₃): 3514, 3435, 3311, 1705, 1639, 1541, 1513, 1410 cm⁻¹.

[α]_D^{24.5}+40.8±0.8° (c=1.000, MeOH)

15 Elemental Analysis (C₃₀H₃₈N₂O₄S·0.4H₂O)

Calcd.(%): C, 68.00; H, 7.38; N, 5.29; S, 6.05

Found(%): C, 68.06; H, 7.38; N, 5.28; S, 5.92

Compound II-138

300MHz ¹H-NMR(CDCl₃) δ : 0.94(1H, d, J=9.9Hz), 1.09 and 1.21(each 3H, each
20 s), 1.51-2.42(14H, m), 2.99(3H, s), 4.11(2H, s), 4.20(1H, m), 5.33-5.49(2H, m),
6.01(1H, d, J=9.3Hz), 6.78(1H, d, J=3.6Hz), 6.86(1H, br s), 7.17-7.25(4H, m),
7.31(1H, d, J=3.6Hz).

IR(CHCl₃): 3510, 3448, 3431, 3371, 1707, 1639, 1543, 1510, 1471, 1456, 1387, 1330, 1155 cm⁻¹.

25 [α]_D^{24.5}+37.6±0.8° (c=1.006, MeOH)

Elemental Analysis (C₂₉H₃₈N₂O₅S·0.3H₂O)

Calcd.(%): C, 61.74; H, 6.90; N, 4.97; S, 11.37

Found(%): C, 61.84; H, 6.93; N, 5.03; S, 11.14

Compound II-139

mp.149-150°C

300MHz ¹H-NMR(CDCl₃) δ: 0.92(1H, d, J=10.5Hz), 1.05 and 1.19(each 3H, each
5 s), 1.47-2.40(14H, m), 4.18(1H, m), 4.40(2H, s), 5.31-5.46(2H, m), 5.98(1H, d,
J=8.4Hz), 6.88(1H, d, J=3.9Hz), 7.30-7.35(2H, m), 7.42-7.48(3H, m), 7.58(1H,
m), 8.08(1H, d, J=6.6Hz), 8.14(1H, m).

IR(CHCl₃): 3514, 3450, 3431, 2667, 1738, 1707, 1643, 1543, 1508, 1471, 1458,
1444 cm⁻¹.

10 $[\alpha]_D^{24} +39.7 \pm 0.8^\circ$ (c=1.008, MeOH)

Elemental Analysis (C₃₄H₃₇NO₃S₂)

Calcd.(%): C, 71.42; H, 6.52; N, 2.45; S, 11.22

Found(%): C, 71.21; H, 6.53; N, 2.51; S, 10.97

Compound II-140

15 300MHz ¹H-NMR(CDCl₃) δ: 0.92(1H, d, J=10.5Hz), 1.06 and 1.19(each 3H, each
s), 1.48-2.40(14H, m), 3.79(2H, s), 4.18(1H, m), 4.26(2H, s), 5.21-5.47(2H, m),
5.96(1H, d, J=8.4Hz), 6.78(1H, d, J=3.6Hz), 7.18(1H, d, J=7.2Hz), 7.27-7.40(4H,
m), 7.53(1H, d, J=7.2Hz), 7.72(1H, d, J=7.8Hz), 7.78(1H, d, J=6.9Hz).

IR(CHCl₃): 3510, 3450, 3431, 2669, 1739, 1709, 1641, 1543, 1506, 1471, 1456
20 cm⁻¹.

$[\alpha]_D^{24} +36.6 \pm 0.8^\circ$ (c=1.006, MeOH)

Elemental Analysis (C₃₅H₃₉NO₃S·0.2H₂O)

Calcd.(%): C, 75.42; H, 7.13; N, 2.51; S, 5.75

Found(%): C, 75.46; H, 7.15; N, 2.73; S, 5.55

25 Compound II-141

300MHz ¹H-NMR(CDCl₃) δ: 0.93(1H, d, J=9.9Hz), 1.08 and 1.21(each 3H, each
s), 1.50-2.43(14H, m), 2.20, 2.45 and 3.67(each 3H, each s), 4.13(2H, s), 4.19(1H,

m), 5.33-5.49(2H, m), 5.97(1H, d, J=8.4Hz), 6.77(1H, td, J=0.9 and 3.9Hz), 6.89 and 6.95(each 1H, each d, each J=7.8Hz), 7.31(1H, d, J=3.6Hz).

IR(CHCl₃): 3516, 3450, 3431, 1738, 1709, 1641, 1545, 1506, 1458, 1263, 1084, 1009 cm⁻¹.

5 $[\alpha]_D^{24} + 39.8 \pm 0.8^\circ$ (c=1.006, MeOH)

Elemental Analysis (C₃₁H₄₁NO₄S)

Calcd.(%): C, 71.09; H, 7.89; N, 2.67; S, 6.12

Found(%): C, 70.80; H, 8.02; N, 2.92; S, 6.06

Compound II-142

10 300MHz ¹H-NMR(CDCl₃) δ: 0.93(1H, d, J=10.2Hz), 1.06 and 1.19(each 3H, each s), 1.49-2.41(14H, m), 4.18(1H, m), 4.50(2H, s), 5.32-5.47(2H, m), 5.98(1H, d, J=9.0Hz), 6.89(1H, d, J=3.9Hz), 7.29-7.38(4H, m), 7.47(1H, m), 7.59(1H, d, J=8.4Hz), 7.86(1H, m), 7.95(1H, d, J=7.8Hz).

IR(CHCl₃): 3510, 3450, 3431, 2669, 1739, 1709, 1641, 1545, 1508, 1471, 1450,

15 1423 cm⁻¹.

$[\alpha]_D^{24} + 40.3 \pm 0.8^\circ$ (c=1.007, MeOH)

Elemental Analysis (C₃₄H₃₇NO₄S·0.2H₂O)

Calcd.(%): C, 73.01; H, 6.74; N, 2.50; S, 5.73

Found(%): C, 72.91; H, 6.58; N, 2.59; S, 5.75

20 Compound II-143

300MHz ¹H-NMR(CDCl₃) δ: 0.94(1H, d, J=10.5Hz), 1.08 and 1.21(each 3H, each s), 1.18(3H, t, J=7.8Hz), 1.50-2.42(14H, m), 2.64(2H, q, J=7.8Hz), 4.15(2H, s), 4.19(1H, m), 5.33-5.48(2H, m), 5.96(1H, d, J=9.3Hz), 6.68(1H, d, J=3.6Hz), 7.16-7.25(4H, m), 7.29(1H, d, J=3.6Hz).

25 IR(CHCl₃): 3516, 3450, 3431, 2667, 1739, 1709, 1641, 1543, 1506, 1471, 1456 cm⁻¹.

$[\alpha]_D^{21} + 41.9 \pm 0.8^\circ$ (c=1.013, MeOH)

Elemental Analysis ($C_{30}H_{39}NO_3S \cdot 0.1H_2O$)

Calcd.(%): C, 72.72; H, 7.97; N, 2.83; S, 6.47

Found(%): C, 72.55; H, 7.88; N, 3.19; S, 6.62

Compound III-1

5 300MHz 1H -NMR($CDCl_3$) δ : 0.88(1H, d, $J=10.2Hz$), 1.07 and 1.23(each 3H, each s), 1.56-2.51(13H, m), 2.67(1H, m), 4.41(1H, m), 5.29-5.41(2H, m), 6.07(1H, d, $J=8.1Hz$), 6.34 and 7.16(each 2H, each t, each $J=2.1Hz$), 7.35 and 7.52(each 1H, each d, each $J=3.9Hz$).

IR($CHCl_3$): 3511, 3431, 3144, 3101, 2668, 1708, 1656, 1530, 1505, 1455, 1384,

10 1167 cm^{-1} .

$[\alpha]_D^{24} +34.2 \pm 0.7^\circ$ ($c=1.007$, MeOH)

Elemental Analysis ($C_{25}H_{32}N_2O_5S_2 \cdot 0.5H_2O$)

Calcd.(%): C, 58.46; H, 6.48; N, 5.45; S, 12.48

Found(%): C, 58.77; H, 6.40; N, 5.65; S, 12.72

15 Compound III-2

300MHz 1H -NMR($CDCl_3$) δ : 0.90(1H, d, $J=9.9Hz$), 1.06 and 1.23(each 3H, each s), 1.58-2.48(13H, m), 2.67(1H, m), 4.41(1H, m), 5.29-5.42(2H, m), 6.27(1H, d, $J=8.1Hz$), 7.38-7.44(3H, m), 6.34(1H, d, $J=3.9Hz$), 8.14(1H, dd, $J=1.5$ and 3.0Hz).

20 IR($CHCl_3$): 3517, 3431, 3361, 3114, 1708, 1654, 1530, 1504, 1332, 1151 cm^{-1} .

$[\alpha]_D^{24} +33.7 \pm 0.7^\circ$ ($c=1.003$, MeOH)

Elemental Analysis ($C_{25}H_{31}NO_5S_2 \cdot 0.2H_2O$)

Calcd.(%): C, 57.16; H, 6.02; N, 2.67; S, 18.31

Found(%): C, 57.09; H, 5.88; N, 2.76; S, 18.15

25 Compound III-3

300MHz 1H -NMR($CDCl_3$) δ : 0.94(1H, d, $J=9.9Hz$), 1.07 and 1.23(each 3H, each s), 1.56-2.48(13H, m), 2.68(1H, m), 4.42(1H, m), 5.29-5.42(2H, m), 6.16(1H, d,

J=8.4Hz), 7.16(1H, dd, J=3.9 and 5.1Hz), 7.42 and 7.63(each 1H, each d, each J=3.9Hz), 7.70(1H, dd, J=1.5 and 5.1Hz), 7.76(1H, dd, J=1.5 and 3.9Hz).

IR(CHCl₃): 3516, 3431, 3365, 3097, 1708, 1654, 1530, 1505, 1402, 1336, 1153 cm⁻¹.

5 $[\alpha]_{\text{D}}^{24} +34.5 \pm 0.7^\circ$ (c=1.010, MeOH)

Elemental Analysis (C₂₅H₃₁NO₅S₃·0.1H₂O)

Calcd.(%): C, 57.36; H, 6.01; N, 2.68; S, 18.38

Found(%): C, 57.16; H, 5.88; N, 2.76; S, 18.36

Compound III-4

10 300MHz ¹H-NMR(CDCl₃) δ: 0.88(1H, d, J=9.9Hz), 1.07 and 1.23(each 3H, each s), 1.58-2.34(12H, m), 2.39(3H, s), 2.44(1H, m), 2.68(1H, m), 4.41(1H, m), 5.29-5.42(2H, m), 5.99(1H, m), 6.08(1H, d, J=8.4Hz), 6.20(1H, t, J=3.3Hz), 7.19(1H, m), 7.38 and 7.55(each 1H, each d, each J=3.9Hz).

IR(CHCl₃): 3510, 3431, 3150, 3100, 1708, 1656, 1530, 1505, 1375, 1161 cm⁻¹.

15 $[\alpha]_{\text{D}}^{24} +30.9 \pm 0.7^\circ$ (c=1.000, MeOH)

Elemental Analysis (C₂₆H₃₄N₂O₅S₂·0.3H₂O)

Calcd.(%): C, 59.58; H, 6.65; N, 5.35; S, 12.24

Found(%): C, 59.57; H, 6.48; N, 5.51; S, 12.22

Compound IV-1

20 300MHz ¹H-NMR(CDCl₃) δ: 0.85 and 1.22(each 3H, each s), 1.44(1H, d, J=10.2Hz), 1.54-2.51(14H, m), 4.10(1H, m), 5.31-5.41(2H, m), 6.21(1H, d, J=8.4Hz), 7.11(1H, dd, J=3.9 and 4.8Hz), 7.44 and 7.63(each 1H, each d, each J=3.9Hz), 7.70(1H, dd, J=1.2 and 4.8Hz), 7.75(1H, dd, J=1.2 and 3.9Hz).

IR(CHCl₃): 3517, 3423, 3366, 3097, 2665, 1708, 1655, 1530, 1505, 1335, 1153 cm⁻¹.

25 $[\alpha]_{\text{D}}^{23} -46.4 \pm 0.9^\circ$ (c=1.010, MeOH)

Elemental Analysis (C₂₅H₃₁NO₅S₃·0.3H₂O)

Calcd.(%): C, 56.97; H, 6.04; N, 2.66; S, 18.25

Found(%): C, 57.10; H, 5.96; N, 2.70; S, 18.02

Compound IV-2

300MHz ^1H -NMR(CDCl_3) δ : 0.84 and 1.22(each 3H, each s), 1.43(1H, d, $J=10.5\text{Hz}$), 1.53-2.50(14H, m), 4.09(1H, m), 5.30-5.41(2H, m), 6.17(1H, d, $J=8.7\text{Hz}$), 6.33 and 7.16(each 2H, each t-like), 7.40 and 7.57(each 1H, each d, each $J=3.9\text{Hz}$).

IR(CHCl_3): 3514, 3432, 3144, 3102, 1708, 1657, 1531, 1506, 1456, 1384, 1167 cm^{-1} .

[α] $_{\text{D}}^{23}$: 45.4 \pm 0.9 $^\circ$ ($c=1.010$, MeOH)

Elemental Analysis ($\text{C}_{25}\text{H}_{30}\text{N}_2\text{O}_5\text{S}_2\cdot 0.3\text{H}_2\text{O}$)

Calcd.(%): C, 59.10; H, 6.07; N, 5.51; S, 12.62

Found(%): C, 59.12; H, 5.83; N, 5.53; S, 12.41

Compound V-1

300MHz ^1H -NMR(CDCl_3) δ : 1.24-2.13(13H, m), 2.22(1H, m), 2.32(2H, t, $J=7.2\text{Hz}$), 3.41(1H, m), 3.44(1H, m), 5.18-5.36(2H, m), 6.19(1H, m), 6.33 and 7.15(each 2H, each t, each $J=2.4\text{Hz}$), 7.28 and 7.55(each 2H, each t, each $J=3.9\text{Hz}$).

IR(CHCl_3): 3512, 3439, 3144, 3100, 1708, 1658, 1535, 1508, 1446, 1167 cm^{-1} .

[α] $_{\text{D}}^{25}$: +69.5 \pm 1.1 $^\circ$ ($c=1.012$, MeOH)

Elemental Analysis ($\text{C}_{23}\text{H}_{28}\text{N}_2\text{O}_5\text{S}\cdot 0.5\text{H}_2\text{O}$)

Calcd.(%): C, 56.89; H, 6.02; N, 5.77; S, 13.21

Found(%): C, 56.91; H, 5.96; N, 5.91; S, 13.37

Compound V-2

300MHz ^1H -NMR(CDCl_3) δ : 1.14-2.16(13H, m), 2.23(1H, m), 2.30-2.37(2H, m), 3.41(1H, m), 3.45(1H, m), 5.18-5.36(2H, m), 6.19(1H, m), 7.11(1H, dd, $J=3.9$ and 5.1Hz), 7.32 and 7.62(each 1H, each d, each $J=3.9\text{Hz}$), 7.39(1H, dd, $J=1.5$

and 5.1Hz), 7.75(1H, dd, J=1.5 and 3.9Hz).

IR(CHCl₃): 3512, 3440, 3096, 1708, 1657, 1534, 1507, 1402, 1336, 1153 cm⁻¹.

[α]_D²⁵ +69.2±1.1° (c=1.006, MeOH)

Elemental Analysis (C₂₃H₂₇NO₅S₃·0.1H₂O)

5 Calcd.(%): C, 55.57; H, 5.51; N, 2.83; S, 19.42

Found(%): C, 55.55; H, 5.32; N, 2.85; S, 19.21

Compound V-3

300MHz ¹H-NMR(CDCl₃) δ : 1.16-2.14(13H, m), 2.23(1H, m), 2.28-2.36(2H, m),

3.54-3.46(2H, m), 5.17-5.37(2H, m), 6.14(1H, m), 7.32(1H, d, J=3.9Hz), 7.38-

10 7.44(2H, m), 7.61(1H, d, J=3.9Hz), 8.15(1H, dd, J=1.2 and 3.0Hz).

IR(CHCl₃): 3508, 3431, 3114, 1708, 1656, 1534, 1508, 1331, 1152, 1102 cm⁻¹.

[α]_D²⁴ +66.5±1.1° (c=1.003, MeOH)

Elemental Analysis (C₂₃H₂₇NO₅S₃·0.3H₂O)

Calcd.(%): C, 55.35; H, 5.57; N, 2.81; S, 19.28

15 Found(%): C, 55.29; H, 5.54; N, 2.85; S, 19.01

Compound V-4

300MHz ¹H-NMR(CDCl₃) δ : 1.18-2.18(13H, m), 2.23(1H, m), 2.31-2.35(2H, m),

2.38(3H, s), 3.43(2H, m), 5.18-5.36(2H, m), 5.98(1H, m), 6.14(1H, m), 6.19(1H, t,

J=3.3Hz), 7.17(1H, m), 7.29 and 7.53(each 1H, each d, each J=3.9Hz).

20 IR(CHCl₃): 3512 3440, 3150, 3101, 1708, 1658, 1535, 1508, 1375, 1161 cm⁻¹.

[α]_D²⁴ +30.9±0.7° (c=1.000, MeOH)

Elemental Analysis (C₂₅H₃₄N₂O₅S₂·0.3H₂O)

Calcd.(%): C, 59.58; H, 6.65; N, 5.35; S, 12.24

Found(%): C, 59.57; H, 6.48; N, 5.51; S, 12.22

25 Compound V-5

300MHz ¹H-NMR(CDCl₃) δ : 1.18-2.10(13H, m), 2.11(1H, m), 2.21-2.35(2H, m),

3.35(1H, m), 3.46(1H, m), 4.12(2H, s), 5.17-5.34(2H, m), 5.88(1H, m), 6.74(1H,

d, $J=3.9\text{Hz}$), 7.21-7.38(6H, m).

IR(CHCl_3): 3511, 3432, 3065, 1708, 1642, 1547, 1515, 1455 cm^{-1} .

$[\alpha]_{\text{D}}^{28} +69.1 \pm 1.1^\circ$ ($c=1.009$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{31}\text{NO}_3\text{S} \cdot 0.1\text{H}_2\text{O}$)

5 Calcd.(%): C, 71.07; H, 7.16; N, 3.19; S, 7.30

Found(%): C, 70.91; H, 7.18; N, 3.19; S, 7.34

Compound V-6

300MHz ^1H -NMR(CDCl_3) δ : 1.18-2.15(14H, m), 2.24-2.34(2H, m), 3.36(1H, m),

3.58(1H, m), 5.19-5.40(2H, m), 6.07(1H, m), 7.28-7.42(3H, m), 7.51(1H, d,

10 $J=0.6\text{Hz}$), 7.56-7.59(2H, m), 7.72(1H, d, $J=0.6\text{Hz}$).

IR(CHCl_3): 3514, 3446, 1709, 1649, 1550, 1520, 1491 cm^{-1} .

$[\alpha]_{\text{D}}^{22} +79.4 \pm 1.2^\circ$ ($c=1.004$, MeOH)

Elemental Analysis ($\text{C}_{25}\text{H}_{29}\text{NO}_3\text{S} \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 70.29; H, 6.94; N, 3.28; S, 7.51

15 Found(%): C, 70.26; H, 6.68; N, 3.48; S, 7.44

Compound V-7

300MHz ^1H -NMR(CDCl_3) δ : 1.18-2.14(13H, m), 2.26(1H, m), 2.31-2.36(2H, m),

3.30(1H, m), 3.64(1H, m), 3.82(3H, s), 5.19-5.39(2H, m), 6.06(1H, m), 6.89-

7.01(6H, m), 7.66(2H, d, $J=8.1\text{Hz}$).

20 IR(CHCl_3): 3514, 3446, 1709, 1649, 1550, 1520, 1491 cm^{-1} .

$[\alpha]_{\text{D}}^{22} +76.3 \pm 1.2^\circ$ ($c=1.009$, MeOH)

Elemental Analysis ($\text{C}_{28}\text{H}_{33}\text{NO}_5 \cdot 0.2\text{H}_2\text{O}$)

Calcd.(%): C, 71.99; H, 7.21; N, 3.00

Found(%): C, 72.05; H, 7.35; N, 2.93

25 Compound V-8

300MHz ^1H -NMR(CDCl_3) δ : 1.18-2.14(13H, m), 2.25(1H, m), 2.31-2.39(2H, m),

3.32(1H, m), 3.56(1H, m), 4.09(2H, d, $J=0.3\text{Hz}$), 5.18-5.38(2H, m), 5.89(1H, m),

6.68(1H, d, J=3.6Hz), 6.94(1H, dd, J=3.6 and 5.1Hz), 7.02(1H, dd, J=1.5 and 3.6Hz), 7.23(1H, d, J=3.6Hz), 7.35(1H, dd, J=1.5 and 5.1Hz).

IR(CHCl₃): 3514, 3433, 1709, 1645, 1545, 1516, 1458 cm⁻¹.

[α]_D²³ +61.8±1.0° (c=1.008, MeOH)

5 Elemental Analysis (C₂₄H₂₉NO₃S₃·0.2H₂O)

Calcd.(%): C, 60.14; H, 6.18; N, 2.92; S, 20.07

Found(%): C, 60.08; H, 6.11; N, 2.90; S, 20.05

Compound V-9

300MHz ¹H-NMR(CDCl₃) δ : 1.06-2.15(13H, m), 2.23(1H, m), 2.28-2.38(2H, m),
10 3.35(1H, m), 3.54(1H, m), 5.20(2H, s), 5.19-5.37(2H, m), 5.95(1H, m), 6.94-
7.04(4H, m), 7.27-7.35(3H, m).

IR(CHCl₃): 3514, 3433, 1709, 1647, 1599, 1547, 1518, 1495 cm⁻¹.

[α]_D²⁴ +67.8±1.1° (c=1.008, MeOH)

Elemental Analysis (C₂₆H₃₁NO₄S·0.2H₂O)

15 Calcd.(%): C, 68.30; H, 6.92; N, 3.06; S, 7.01

Found(%): C, 68.31; H, 6.84; N, 3.16; S, 7.11

Compound V-10

300MHz ¹H-NMR(CDCl₃) δ : 1.06-2.14(13H, m), 2.24(1H, m), 2.30-2.37(2H, m),
3.31(1H, m), 3.53(1H, m), 4.50(2H, d, J=0.9Hz), 5.15-5.36(2H, m), 5.89(1H, m),
20 6.65-6.79(3H, m), 6.95(1H, d, J=3.9Hz), 7.15-7.21(2H, m), 7.33(1H, d,
J=3.9Hz).

IR(CHCl₃): 3512, 3440, 1707, 1643, 1603, 1547, 1506 cm⁻¹.

[α]_D²² +67.3±1.1° (c=1.009, MeOH)

Elemental Analysis (C₂₆H₃₂N₂O₅S·0.3H₂O)

25 Calcd.(%): C, 68.18; H, 7.17; N, 6.20; S, 7.00

Found(%): C, 68.04; H, 7.09; N, 6.25; S, 7.02

Compound V-11

300MHz ^1H -NMR(CDCl_3) δ : 1.06-2.15(13H, m), 2.27(1H, m), 2.28-2.38(2H, m), 3.31(1H, m), 3.54(1H, m), 4.24(2H, d, $J=0.6\text{Hz}$), 5.17-5.36(2H, m), 5.87(1H, m), 6.78(1H, d, $J=3.6\text{Hz}$), 7.21-7.42(6H, m).

IR(CHCl_3): 3514, 3433, 3062, 2669, 1709, 1643, 1545, 1514 cm^{-1} .

5 $[\alpha]_{\text{D}^{22}} +64.3 \pm 1.0^\circ$ ($c=1.000$, MeOH)

Elemental Analysis ($\text{C}_{26}\text{H}_{31}\text{NO}_3\text{S}_2 \cdot 0.5\text{H}_2\text{O}$)

Calcd.(%): C, 65.24; H, 6.74; N, 2.93; S, 13.40

Found(%): C, 65.23; H, 6.55; N, 3.00; S, 13.46

Compound V-12

10 300MHz ^1H -NMR(CDCl_3) δ : 1.18-1.81(7H, m), 1.85-1.94(2H, m), 2.01-2.13(2H, m), 2.22-2.33(3H, m), 3.41(1H, m), 3.33(1H, m), 3.49(2H, s), 3.54(1H, m), 4.15(2H, s), 5.17-5.37(2H, m), 5.90(1H, m), 6.12(1H, dd, $J=0.9$ and 3.0Hz), 6.31(1H, dd, $J=1.8$ and 3.0Hz), 6.81 and 7.30(each 1H, each d, each $J=3.6\text{Hz}$), 7.34(1H, dd, $J=0.9$ and 1.8Hz).

15 IR(CHCl_3): 3516, 3433, 1709, 1643, 1547, 1516 cm^{-1} .

$[\alpha]_{\text{D}^{23}} +71.3 \pm 1.1^\circ$ ($c=1.004$, MeOH)

Elemental Analysis ($\text{C}_{24}\text{H}_{29}\text{NO}_4\text{S} \cdot 0.3\text{H}_2\text{O}$)

Calcd.(%): C, 66.58; H, 6.89; N, 3.24; S, 7.41

Found(%): C, 66.55; H, 6.63; N, 3.37; S, 7.51

20 Compound VI-1

mp.105-106°C

300MHz ^1H -NMR(CDCl_3) δ : 1.06(1H, m), 1.19-1.29(2H, m), 1.42-1.47(2H, m), 1.58-1.78(4H, m), 2.00-2.19(5H, m), 2.35(2H, t, $J=7.2\text{Hz}$), 2.52(1H, m), 3.82(1H, m), 4.16(2H, s), 5.30-5.42(2H, m), 5.99(1H, d, $J=7.5\text{Hz}$), 6.79(1H, dt, $J=0.9$ and 3.9Hz), 6.96(1H, dd, $J=1.5$ and 4.8Hz), 7.05(1H, m), 7.28(1H, dd, $J=3.0$ and 4.8Hz), 7.37(1H, d, $J=3.9\text{Hz}$).

IR(KBr): 3367, 2667, 1700, 1612, 1543, 1520, 1317, 1244 cm^{-1} .

$[\alpha]_{D^{24}} + 70.2 \pm 1.1^\circ$ ($c=1.006$, MeOH)

Elemental Analysis ($C_{24}H_{29}NO_3S_2$)

Calcd.(%): C, 64.98; H, 6.59; N, 3.16; S, 14.46

Found(%): C, 64.92; H, 6.52; N, 3.32; S, 14.48

5

The compounds prepared in Examples above were tested for determining the in vivo and in vitro activities according to the method as shown in Experimental examples below.

Experiment 1 Binding activity to PGD₂ Receptor

10 (1) Preparation of Human Platelet Membrane Fraction

Blood was collected using a plastic syringe containing 3.8 % sodium citrate from the vein of healthy volunteers (adult male and female), then put into a plastic test tube and mixed by slow-reversion. The sample was then centrifuged at 1800 rpm, for 10 min at room temperature, and the supernatant containing PRP (platelet-rich plasma) was collected. The PRP was re-centrifuged at 2300 rpm, for 22 min at room temperature to obtain platelets. The platelets were homogenized using a homogenizer (Ultra-Turrax) followed by centrifugation 3 times at 20,000 rpm, 10 min at 4 °C to obtain a platelet membrane fraction. After protein determination, the membrane fraction was adjusted to 2 mg/ml and preserved in a refrigerator at -80 °C until using for the binding test.

20 (2) Binding to PGD₂ Receptor

To a binding-reaction solution (50 mM Tris/HCl, pH 7.4, 5 mM MgCl₂) (0.2 ml) were added the human platelet membrane fraction (0.1 mg) and 5 nM [³H]PGD₂ (115 Ci/mmol), and the mixture was reacted at 4 °C for 90 min. After the reaction, the mixture was filtered through a glass fiber filter paper and washed several times with cooled physiological saline, then the

radioactivity retained on the filter paper was measured. The specific-binding ratio was calculated by subtracting the non-specific binding ratio which is the radioactivity similarly measured in the presence of 10 μ M PGD₂ from the total binding. The inhibitory activity of each compound was expressed as the concentration required for 50 % inhibition (IC₅₀), which was determined by depicting a substitution curve by plotting the binding ratio (%) in the presence of each compound, where the binding ratio in the absence of a test compound is 100 %.

Experiment 2 Binding activity to TXA₂ Receptor

(1) Preparation of Human Platelet Membrane Fraction

The human platelet membrane fraction was prepared in accordance with Experiment 1 (1).

(2) Binding to TXA₂ Receptor

To a binding-reaction solution (50 mM Tris/HCl, pH 7.4, 10 mM MgCl₂) (0.2 ml) were added the human platelet membrane fraction (0.05 mg) and 2 nM Sodium [³H](+)-(5Z)-7-[3-endo-[(phenylsulfonyl)amino]bicyclo[2.2.1]hept-2-exo-yl]heptenoate (Japanese Patent Publication (Kokoku) No.79060/1993, hereinafter referred to as (+)-S-145 sodium salt) (26.4 Ci/mmol), and the mixture was reacted at room temperature for 90 min. After the reaction, the resultant mixture was filtered through a glass fiber filter paper and washed several times with cooled physiological saline, then the radioactivity retained on the filter paper was measured. The specific-binding ratio was calculated by subtracting the non-specific binding ratio (the radio activity similarly determined in the presence of 10 μ M (+)-S-145 sodium salt) from the total binding. The inhibitory activity of each compound was expressed as the concentration required for 50 % inhibition (IC₅₀), which was determined by

depicting a substitution curve by plotting the binding ratio (%) in the presence of each compound, where the binding ratio in the absence of a test compound is 100 %.

5 Experiment 3 Evaluation of Antagonistic Activity Against PGD₂ Receptor Using Human Platelet

Peripheral blood was collected from a healthy volunteer using a syringe in which 1/9 volume of a citric acid/dextrose solution was previously added. The sample was subjected to centrifugation at 180 g for 10 min to obtain the supernatant (PRP: platelet rich plasma). The resultant PRP was washed 3 times with a washing buffer and the number of platelets was counted with a micro cell counter. A suspension adjusted to contain the platelets at a final concentration of $5 \times 10^8/\text{ml}$ was warmed at 37 °C, then subjected to the pre-treatment with 3-isobutyl-1-methylxanthine (0.5 mM) for 5 min. To the suspension was added a test compound diluted at various concentration, and 10 minutes later, 0.1 μM PGD₂ was added to induce the reaction 2 minutes later, hydrochloric acid was added to terminate the reaction. The platelet was destroyed with an ultrasonic homogenizer. After centrifugation, the cAMP in the supernatant was determined by radioimmunoassay. PGD₂ receptor antagonism of a drug was evaluated as follows: the inhibition rate regarding cAMP increased by the addition of PGD₂ was determined at each concentration, and the concentration of the drug required for 50 % inhibition (IC₅₀) was calculated.

25 The results of Experiment 1-3 are shown below.

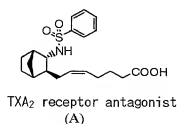
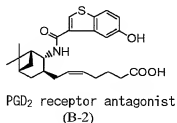
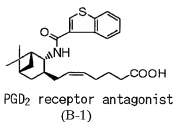
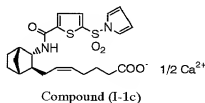
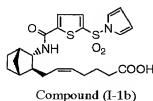
Table 31

Compound No.	Binding activity to PGD ₂ receptor in human platelet membrane fraction IC ₅₀ (μ M)	Binding activity to TXA ₂ receptor in human platelet membrane fraction IC ₅₀ (μ M)	Inhibitory activity for the increase of cAMP caused by PGD ₂ in human platelet IC ₅₀ (μ M)
I-1b	0.0043	0.003	0.0013
I-10	0.0016	0.092	0.0018
I-31	0.0082	0.130	0.0057
I-47	0.0041	0.0062	0.007
I-59	0.00041	0.016	0.0046
I-66	0.0046	0.034	0.044
I-79	0.00042	0.015	0.024
I-80	0.0066	0.0052	0.039
I-82	0.032	0.0018	0.053
I-88	0.0076	0.078	0.0047
I-93	0.0070	0.072	0.0084
I-94	0.001	0.083	0.01
I-104	0.0001	0.039	0.0016
I-106	0.013	0.013	0.0093
I-117	0.0091	0.0038	0.047
I-128	0.020	0.048	0.01
I-129	0.011	0.052	0.022
I-131	0.044	0.019	0.041
I-132	0.032	0.012	0.043
I-136	0.023	0.016	0.015
I-143	0.0027	0.028	0.0019
I-146	0.044	0.019	0.073
I-160	0.028	0.02	0.085
I-168	0.00046	0.034	0.029
I-169	0.00061	0.032	0.026
I-170	0.00092	0.027	0.017
I-182	0.061	0.028	0.011

Table 32

Compound No.	Binding activity to PGD ₂ receptor in human platelet membrane fraction IC ₅₀ (μM)	Binding activity to TXA ₂ receptor in human platelet membrane fraction IC ₅₀ (μM)	Inhibitory activity for the increase of cAMP caused by PGD ₂ in Human Platelet IC ₅₀ (μM)
II-11	0.0079	0.030	0.0003
II-15	0.002	0.012	0.011
II-18	0.00096	0.0036	0.004
II-21	0.0001	0.014	0.024
II-30	0.072	0.0040	0.045
II-34	0.0015	0.0044	0.0039
II-37	0.0046	0.045	0.004
II-40	0.026	0.0043	0.035
II-45	0.022	0.0026	0.024
II-59	0.032	0.072	0.025

Experiments for comparing the present compound having a dual antagonistic activity against PGD₂/TXA₂ receptors (e.g., I-1b, I-1c) with a PGD₂ receptor antagonist (e.g., B-1, B-2) and a TXA₂ antagonist (e.g., A) are shown below.



Comparative Experiment 1

The experiments were carried out in accordance with the above Experiment 1-3 for the purpose of comparing the compound having a dual

antagonistic activity against PGD₂/TXA₂ receptor with a PGD₂ receptor antagonist and a TXA₂ receptor antagonist.

Table 33

	Experiment 1	Experiment 2	Experiment 3
Compound	Antagonistic activity against PGD ₂ receptor IC ₅₀ (μM)	Antagonistic activity against TXA ₂ receptor IC ₅₀ (μM)	Antagonistic activity against PGD ₂ receptor IC ₅₀ (μM)
Compound (I-1b)	0.0043	0.003	0.0013
TXA ₂ receptor antagonist (A)	>10	0.0038	>10
PGD ₂ receptor antagonist (B-1)	0.0082	3.8	0.041

Comparative Experiment 2

Antigen-induced bronchial hyperresponsiveness

Male Hartley guinea pigs were actively sensitized to ovalbumin (OVA) by inhalation of aerosolized solution of 1% ovalbumin twice at a week interval.

One week after the second sensitization, the animals were treated with antihistamine, diphenhydramine (10 mg/kg, i.p.), and then challenged with 1% OVA aerosol for 5 min. Twenty four hours later, acetylcholine at doses at 3.13, 6.25, 12.5, 25, 50 and 100 micro g/kg was sequentially injected into the animals which were anesthetized with pentobarbital (30 mg/kg, i.p.). The bronchoconstriction induced by each dose of acetylcholine was monitored by the modified method of Konzett-Rössler technique, and made a dose-response curve of acetylcholine. Using the dose-response curve, the dose required for 200% increase in bronchoconstriction from baseline (PD₂₀₀) was calculated in each animal and used as an indication of bronchial responsiveness. Compounds were orally administered 1 hour before antigen challenge.** : P<0.01 vs Vehicle(Dunnett's test), ## : P<0.01 vs Vehicle(Student's t test).

Table 34

	Log PD ₂₀₀
Vehicle	1.14 ± 0.03
Compound (I -1b) 1mg/kg	1.25 ± 0.05
Compound (I -1b) 10mg/kg	1.52 ± 0.06 **
Negative control	1.59 ± 0.08 ##

Table 35

	Log PD ₂₀₀
Vehicle	1.23 ± 0.06
Compound (B-2)10mg/kg	1.17 ± 0.05
Negative control	1.61 ± 0.06 ##

5 Table 36

	Log PD ₂₀₀
Vehicle	1.11 ± 0.06
Compound (A)1mg/kg	1.29 ± 0.04
Compound (A)10mg/kg	1.61 ± 0.09 **
Negative control	1.69 ± 0.06 ##

As shown in Table 34, 35 and 36, a PGD₂ receptor antagonist (B-2) did not inhibit the induction of bronchial hyperresponsiveness, but TXA₂ receptor antagonist (A) and PGD₂/TXA₂ dual receptor antagonist, (e.g., I-1b) suppressed it, indicating that TXA₂ receptor antagonism is necessary for improvement of bronchial hyperresponsiveness.

Comparative Experiment 3

Antigen-induced increase in the eosinophil number in bronchoalveolar lavage fluid.

As described above, the animals were sensitized and challenged with antigen, seventy-two hours later, bronchoalveolar lavage was performed with 10 mL of saline. After the number of total cells in the recovered fluid was counted, smear samples were made. The samples were stained with May

Grünward-Giemsa Stain, and differential cell count was performed by counting 500 cells/each sample. The eosinophil number was calculated by the ratio of the number of eosinophils, macrophages, neutrophils and lymphocytes. Compounds were orally administered three times 1 hour before and 24 and 48 hours after the challenge. The results are shown as follows. * : P<0.05, ** : P<0.01 vs Vehicle(Dunnett's test), ## : P<0.01 vs Vehicle(Student's t test). () : inhibition %.

Table 37

	Cell number ($\times 10^6$ cells/animal)	
	Total cells	Eosinophils
Vehicle	18.99 \pm 1.69	6.06 \pm 0.81
Compound (I-1c) 1mg/kg	12.40 \pm 1.27 ** (50%)	4.33 \pm 0.45 (38%)
Compound (I-1c) 10mg/kg	8.27 \pm 0.65 ** (81%)	2.64 \pm 0.16 ** (75%)
Negative control	5.72 \pm 0.36 ##	1.49 \pm 0.09 ##

Table 38

	Cell number ($\times 10^6$ cells/animal)	
	Total cells	Eosinophils
Vehicle	18.47 \pm 0.70	6.56 \pm 0.60
Compound (B-2) 10mg/kg	13.01 \pm 1.58 ** (45%)	4.49 \pm 0.63 * (43%)
Negative control	6.32 \pm 0.31 ##	1.78 \pm 0.18 ##

Table 39

	Cell number ($\times 10^6$ cells/animal)	
	Total cells	Eosinophils
Vehicle	12.10 \pm 1.91	4.23 \pm 0.75
Compound (A) 10mg/kg	13.78 \pm 1.75 (-18%)	4.90 \pm 0.73 (-18%)
Negative control	2.98 \pm 0.28 ##	0.55 \pm 0.13 ##

As shown in Table 37, 38 and 39, PGD₂ receptor antagonist (B-2) and PGD₂/TXA₂ dual receptor antagonist (I-1c) significantly suppressed the eosinophil infiltration. But a TXA₂ receptor antagonist (A) did not show any inhibitory actions. These results indicate that PGD₂ receptor antagonism is

necessary for suppression of inflammatory cell infiltration.

Comparative Experiment 4

Antigen-induced bronchoconstriction

5 Male Hartley guinea pigs were passively sensitized by intravenous injection of anti-OVA serum (antibody titer : 1: 3200), and 48 hours later, the animals were challenged by intravenous injection of OVA (70 micro g / kg). The bronchoconstriction induced by antigen was continuously monitored by means of modified method of Konzett-Rössler technique. The peak value of
10 bronchoconstriction in each animal was used for evaluation of compounds. Compound (I-1b) and compound (B-2) were orally administered 1 hour before, compound (A) 2 hours before antigen challenge. The results are shown as follows. * : $P < 0.05$ vs Vehicle, ** : $P < 0.01$ vs Vehicle. () : inhibition %.

15 Table 40

	Peak bronchoconstriction (cm H ₂ O)
Vehicle	68.3 ± 9.2
Compound (I-1b) 1 mg/kg	47.4 ± 11.4 (31%)
Compound (I-1b) 10 mg/kg	28.4 ± 12.9 *(58%)

Table 41

	Peak bronchoconstriction (cm H ₂ O)
Vehicle	30.3 ± 7.4
Compound (B-2) 1 mg/kg	36.5 ± 18.2 (-20%)
Compound (B-2) 30 mg/kg	51.8 ± 16.3 (-71%)

Table 42

	Peak bronchoconstriction (cm H ₂ O)
Vehicle	59.2 ± 7.3
Compound (A) 3 mg/kg	55.3 ± 6.7 (7%)
Compound (A) 10 mg/kg	18.8 ± 3.3 **(68%)

As shown in Table 40, 41 and 42, PGD₂ receptor antagonist (B-2) did not suppress the antigen-induced bronchoconstriction in this model but TXA₂ receptor antagonist (A) and PGD₂/TXA₂ dual receptor antagonist (I-1b) dramatically suppressed it. These results indicate that TXA₂ receptor antagonism is necessary for inhibition of bronchoconstriction.

Formulation Example

It is to be noted that the following Formulation Examples 1 to 8 are mere illustration, but not intended to limit the scope of the invention. The term "Active ingredient" means a compound of the present invention, the prodrug thereof, their pharmaceutically acceptable salt, or their hydrate.

Formulation Example 1

Hard gelatin capsules are prepared using the following ingredients:

	Dose (mg/capsule)
Active ingredient	250
Starch, dried	200
Magnesium stearate	10
Total	460 mg

Formulation Example 2

Tablet are prepared using the following ingredients:

	Dose (mg/tablet)
Active ingredient	250
Cellulose, microcrystals	400
Silicon dioxide, fumed	10
Stearic acid	5
Total	665 mg

The ingredients are blended and compressed to form tablets each weighing 665

mg.

Formulation Example 3

An aerosol solution is prepared containing the following components:

	<u>Weight</u>
Active ingredient	0.25
Ethanol	25.75
Propellant 22 (chlorodifluoromethane)	<u>74.00</u>
Total	100.00

5

The active ingredient is mixed with ethanol and the admixture added to a portion of the propellant 22, cooled to -30 oC and transferred to a filling device.

The required amount is then fed to a stainless steel container and diluted with the reminder of the propellant. The valve units are then fitted to the container.

10

Formulation Example 4

Tablets, each containing 60 mg of active ingredient, are made as follows.

Active ingredient	60 mg
Starch	45 mg
Microcrystals cellulose	35 mg
Polyvinylpyrrolidone (as 10% solution in water)	4 mg
Sodium carboxymethyl starch	4.5 mg
Magnesium stearate	0.5 mg
Talc	<u>1 mg</u>
Total	150 mg

The active ingredient, starch, and cellulose are passed through a No. 45 mesh U.S. sieve, and the mixed thoroughly. The aqueous solution containing polyvinylpyrrolidone is mixed with the resultant powder, and the admixture then is passed through a No. 14 mesh U.S. sieve. The granules so produced are dried at 50°C and passed through a No. 18 mesh U.S. sieve. The sodium carboxymethyl starch, magnesium stearate, and talc, previously passed through No. 60 mesh U.S. sieve, are then added to the granules which, after

15

20

mixing, are compressed on a tablet machine to yield tablets each weighing 150 mg.

Formulation Example 5

- 5 Capsules, each containing 80 mg of active ingredient, are made as follows:

Active ingredient	80 mg
Starch	59 mg
Microcrystals cellulose	59 mg
Magnesium stearate	<u>2 mg</u>
Total	200 mg

The active ingredient, cellulose, starch, and magnesium stearate are blended, passed through a No. 45 mesh U.S. sieve, and filled into hard gelatin capsules in 200 mg quantities.

Formulation Example 6

Suppositories, each containing 225 mg of active ingredient, are made as follows:

Active ingredient	225 mg
Saturated fatty acid glycerides	<u>2000 mg</u>
Total	2225 mg

- 15 The active ingredient is passed through a No. 60 mesh U.S. sieve and suspended in the saturated fatty acid glycerides previously melted using the minimum heat necessary. The mixture is then poured into a suppository mold of nominal 2g capacity and allowed to cool.

Formulation Example 7

Suspensions, each containing 50 mg of active ingredient per 5 ml dose, are made as follows:

Active ingredient	50 mg
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Sodium carboxymethyl cellulose	50 mg
Syrup	1.25 ml
Benzoic acid solution	0.10 ml
Flavor	q.v.
Color	q.v.
Purified water to total	5 ml

The active ingredient is passed through a No. 45 U.S. sieve, and mixed with the sodium carboxymethyl cellulose and syrup to form a smooth paste. The benzoic acid solution, flavor and color are diluted with a portion of the water and added, with stirring. Sufficient water is then added to produce the required volume.

Formulation Example 8

An intravenous formulation may be prepared as follows:

Active ingredient	100 mg
Isotonic saline	1000 ml

The solution of the above ingredients is generally administered intravenously to a subject at a rate of 1 ml per minute.

Industrial Applicability

The pharmacological effect of the compound of the present invention is compared with that of TXA₂ receptor antagonist and PGD₂ receptor antagonist in the following table.

Table 43

	TXA ₂ receptor antagonist	PGD ₂ receptor antagonist	Compound (I)
Bronchial asthma			
Eosinophilic infiltration	×	⊙	⊙
Advance of respiratory anaphylaxis	⊙	×	⊙
Respiratory contraction	⊙	×	⊙

In bronchial asthma, a TXA₂ receptor antagonist itself can inhibit advance of respiratory anaphylaxis and respiratory contraction, but has no

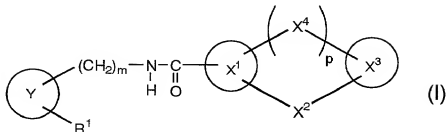
effect for eosinophilic infiltration. A PGD₂ receptor antagonist itself can inhibit eosinophilic infiltration, but has no effect for advance of respiratory anaphylaxis and respiratory contraction. On the other hand, a compound having a dual antagonistic activity against PGD₂/TXA₂ receptors like the
5 compound (I) is efficient for all of eosinophilic infiltration, advance of respiratory anaphylaxis and respiratory contraction.

The compound having a dual antagonistic activity against PGD₂/TXA₂ receptors is useful for treating systemic mastocytosis and disorder of systemic mast cell activation as well as tracheal contraction, asthma, allergic rhinitis,
10 allergic conjunctivitis, urticaria, itching, atopic dermatitis, alimentary allergy, ischemic reperfusion injury, cerebrovascular disorder, and inflammation, and effective for treating or improving condition of diseases such as arteriosclerosis, myocardial infarction, acute myocardial ischemia
15 especially asthma or nasal blockage.

With a dual antagonistic activity against both a TXA₂ receptor and a PGD₂ receptor, the present compound can overcome some problems such as that due to the metabolic rate difference of each compound, which occur upon simultaneous administration of both a TXA₂ receptor antagonist and a PGD₂
20 receptor antagonist.

CLAIMS

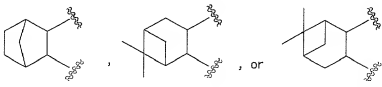
1. (Deleted)
2. (Deleted)
- 5 3. (Deleted)
4. (Deleted)
5. (Deleted)
6. (Deleted)
7. (Deleted)
- 10 8. (Amended) A compound of the formula (I):



wherein



is



R^1 is $-\text{CH}_2-\text{CH}=\text{CH}-\text{CH}_2-\text{CH}_2-\text{COOR}^2$ or $-\text{CH}=\text{CH}-\text{CH}_2-\text{CH}_2-\text{COOR}^2$;

R^2 is hydrogen or alkyl;

m is 0 or 1;

p is 0 or 1, provided that when $p = 0$, X^1 is not bonded to X^3 via X^4 ;

- 20 X^1 and X^3 each is independently optionally substituted aryl or optionally substituted heteroaryl;

X^2 is a bond, $-\text{CH}_2-$, $-\text{CH}_2-\text{CH}_2-$, $-\text{C}(=\text{O})-$, $-\text{O}-$, $-\text{S}-$, $-\text{SO}-$, $-\text{SO}_2-$, $-\text{NH}-$, $-\text{N}(\text{CH}_3)-$, $-\text{C}(=\text{N}-\text{O}-$

CH_3), $-\text{N}=\text{N}-$, $-\text{CH}=\text{CH}-$, $-(\text{C}=\text{O})-\text{NH}-$, $-\text{NH}(\text{C}=\text{O})-$, $-\text{CH}_2-\text{NH}-$, $-\text{NH}-\text{CH}_2-$, $-\text{CH}_2-\text{O}-$, $-\text{O}-\text{CH}_2-$, $-\text{CH}_2-\text{S}-$, $-\text{S}-\text{CH}_2-$, $-\text{CH}_2-\text{SO}_2-$, $-\text{SO}_2-\text{CH}_2-$, $-\text{SO}_2-\text{NH}-$ or $-\text{NH}-\text{SO}_2-$;

X^4 is $-\text{CH}_2-$, $-\text{CH}_2-\text{CH}_2-$, $-\text{C}(\text{O})-$, $-\text{SO}-$, $-\text{SO}_2-$, $-(\text{C}=\text{O})-\text{NH}-$, $-\text{NH}(\text{C}=\text{O})-$, $-\text{CH}_2-\text{NH}-$, $-\text{NH}-\text{CH}_2-$, $-\text{CH}_2-\text{O}-$, $-\text{O}-\text{CH}_2-$, $-\text{CH}_2-\text{S}-$, $-\text{S}-\text{CH}_2-$, $-\text{CH}_2-\text{SO}_2-$, $-\text{SO}_2-\text{CH}_2-$, $-\text{SO}_2-\text{NH}-$ or $-\text{NH}-\text{SO}_2-$;

5 provided that when



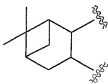
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a compound wherein R^1 is $-\text{CH}_2-\text{CH}=\text{CH}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{COOR}^2$, R^2 is hydrogen or methyl, m is 0, p is 0, X^1 is phenyl optionally substituted with methoxy, X^2 is a bond, $-\text{O}-$, $-\text{CH}_2-$, $-\text{C}(\text{O})-\text{NH}-$, $-\text{S}-$ or $-\text{N}=\text{N}-$, and X^3 is phenyl optionally substituted with hydroxy, acetoxy or methoxy, and a compound wherein R^1 is $-\text{CH}_2-\text{CH}=\text{CH}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{COOH}$, m is 1, p is 0, X^1 is phenyl, X^2 is $-\text{N}=\text{N}-$, and X^3 is phenyl, are excluded, and when



is



R^1 is $-\text{CH}_2-\text{CH}=\text{CH}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{COOR}^2$, R^2 is hydrogen or methyl, m is 0, and p is 0, a compound wherein X^1 is phenyl optionally substituted with methyl or methoxy, X^2 is a bond, $-\text{CH}_2-\text{CH}_2-$, $-\text{C}(\text{O})-$, $-\text{NH}-$, $-\text{O}-$, $-\text{S}-$, $-\text{SO}-$, $-\text{SO}_2-$, $-\text{CH}=\text{CH}-$, $-\text{N}=\text{N}-$, $-\text{C}(\text{O})-\text{NH}-$ or $-\text{NH}-\text{C}(\text{O})-$, and X^3 is phenyl optionally substituted with methyl, hydroxy, acetoxy, methoxy, ethoxy, isopropoxy, dimethylamino, hydroxymethyl, methoxymethyl or

carboxy, a compound wherein X¹ is phenyl, X² is a bond, -CH₂- or -CH=CH-, and X³ is imidazolyl, thienyl, pyridyl or tetrazolyl optionally substituted with methyl or phenyl, and a compound wherein X¹ is benzothienyl, isoxazolyl or thienyl optionally substituted with methyl, X² is a bond or -S-, and X³ is phenyl optionally substituted with methoxy or methyl, are excluded, a prodrug, a pharmaceutically acceptable salt, a hydrate thereof.

9. The compound according to claim 8 wherein at least one of X¹ and X³ is optionally substituted heteroaryl, the prodrug, the pharmaceutically acceptable salt, the hydrate thereof.

10. The compound according to claim 8 wherein X¹ and X³ each is independently optionally substituted heteroaryl, the prodrug, the pharmaceutically acceptable salt, the hydrate thereof.

11. The compound according to claim 8 wherein at least one of X¹ and X³ is optionally substituted thienyl or optionally substituted benzothienyl, the prodrug, the pharmaceutically acceptable salt, the hydrate thereof.

12. The compound according to any one of claims 8 to 11 wherein X² is a bond, -CH₂-, -S-, -SO₂-, -CH₂O-, -O-CH₂-, -CH₂-S- or -S-CH₂-, the prodrug, the pharmaceutically acceptable salt, the hydrate thereof.

13. The compound according to any one of claims 8 to 12 wherein R¹ is -CH₂-CH=CH-CH₂-CH₂-CH₂-COOH, m is 0, and p is 0, the prodrug, the pharmaceutically acceptable salt, the hydrate thereof.

14. A pharmaceutical composition which comprises a compound according to any one of claims 8 to 13.

15. A pharmaceutical composition having a dual antagonistic activity against PGD₂/TXA₂ receptors which comprises a compound according to any one of claims 8 to

13.

16. The pharmaceutical composition comprising a compound according to claim 14 or 15, which is used for asthma.

17. The pharmaceutical composition comprising a compound according to claim 14 or 15, which is used for nasal blockage.

18. (Added) Use of the compound according to any one of claims 8 to 13 for

manufacturing a pharmaceutical composition for asthma or nasal blockage.

19. (Added) A method for treating asthma or nasal blockage which comprises administering the compound according to any one of claims 8 to 13.

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

the specification of which is attached hereto unless the following box is checked:

☐ was filed on March 2, 2000 as United States Application Number or PCT International Application Number PCT/JP00/01223 and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is known by me to be material to patentability as defined in Title 37, Code of Federal Regulations § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed:

PRIOR FOREIGN APPLICATION(S)

NUMBER	COUNTRY	DAY/MONTH/YEAR FILED	PRIORITY CLAIMED
62721/1999	Japan	10/03/1999	Yes

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below.

APPLICATION NO.	FILING DATE

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is known by me to be material to patentability as defined in Title 37, Code of Federal Regulations § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

APPLICATION SERIAL NO.	FILING DATE	STATUS: PATENTED, PENDING, ABANDONED

20 I hereby appoint as my attorneys, with full powers of substitution and revocation, to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: Stephen A. Bent, Reg. No. 29,768; David A. Blumenthal, Reg. No. 26,257; William T. Ellis, Reg. No. 26,874; John J. Feldhaus, Reg. No. 28,822; Patricia D. Granados, Reg. No. 33,683; John P. Isacson, Reg. No. 33,715; Donald D. Jeffery, Reg. No. 19,980; Eugene M. Lee, Reg. No. 32,039; Richard Linn, Reg. No. 25,144; Peter G. Mack, Reg. No. 26,001; Brian J. McNamara, Reg. No. 32,789; Sybil Meloy, Reg. No. 22,749; George E. Quillin, Reg. No. 32,792; Colin G. Sandercock, Reg. No. 31,298; Bernhard D. Saxe, Reg. No. 28,665; Charles F. Schill, Reg. No. 27,599; Richard L. Schwaab, Reg. No. 25,479; Arthur Schwartz, Reg. No. 22,115; Harold C. Wegner, Reg. No. 25,258; Stephen B. Macbius, Reg. No. 35,264.

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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